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THE TREND OF PREVENTIVE MEDICINE IN THE UNITED STATES*

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THE SCIENTIFIC BASIS OF PREVENTIVE MEDICINE

Scientific discoveries of the last half century regarding disease have furnished a sound basis for the field of preventive medicine. Public and private agencies have been established to apply this knowledge. The record of reduction of deaths from controllable diseases is proof of their effectiveness. Additional knowledge of other diseases is needed, and there is a growing tendency to encourage research.

ORGANIZATIONS FOR APPLYING PREVENTIVE MEDICINE

The growth of organizations for applying preventive medicine has followed the development of knowledge of disease.

The United States Public Health Service now has authority to engage in all activities that are proper functions of a national health department. It is a bureau of the Treasury Department. The collection of vital statistics and other public health activities are functions of other departments. The trend is toward consolidation of all federal health work into a single department.

City health departments are generally well organized and are applying the principles of preventive medicine on an intensive scale. The conservation of health during infancy and childhood is being emphasized. Such diseases as smallpox, diphtheria and typhoid fever are disappearing.

All the states in the Union now have health departments, most of them full-time, with the basic divisions of laboratory, vital statistics, sanitary engineering, and preventable diseases well established. The Eastern states have tended toward the centralized type of organization. The Southern, Middle Western and Western states have tended to adopt the decentralized type of organization and to cooperate in local health work with the county as the unit. County health organizations on a full-time basis are being rapidly established. The tendency toward the development of effective local health organizations with state cooperation is growing in the Eastern states.

LOCAL HEALTH ORGANIZATIONS

County Health Organization.—History: The county health organization is a development of the last seven or eight years. In 1914 there were only three in the United States. In 1915 and 1916 the state boards of health, in attempting to control hookworm disease with the financial assistance of the International Health Board, found it necessary to establish an agency to hold the gains and finish the job. As the county had been found by experience to be the most satisfactory unit in local governmental matters of this type, it was adopted as the basis for organizing the full-time local health service. The part-time county health officer had been found unsatisfactory.

The full-time experiment yielded satisfactory results, and soon the organization, in response to popular demand, extended its operations to the broader problems of public health. As the hookworm control measures evolved into full-time county health service on a partnership basis between state and county, so likewise have other specialized efforts in the field of preventive medicine. The United States Public Health Service, in a drive against typhoid fever, broadened its work by degrees to include rural sanitation, and finally it centered its efforts around the establishment of county health organizations as the best means of accomplishing its primary object. The National Tuberculosis Association and the National Child Health Council have recently decided to support the county health organization as the best agency for demonstrating in rural districts the possibilities in their special fields.

The growth in the numbers and distribution of full-time county health organizations since 1914 is reflected in Table 1.

Functions: The county health organization usually consists of a medical officer, a clerk-technician, one or more public health nurses, and, when necessary, a sanitary inspector, all serving on full time. The cost varies with local conditions. An expenditure of from 25 to 50 cents per capita will usually support a creditable staff. This is not burdensome on the taxpayers, and they find it an excellent investment.

The staff visits the schools and homes, and learns first hand the health needs of the individual and of the community. This information is recorded, and serves as a guide in formulating a sound program. If there is no special emergency, those measures are undertaken first which will contribute most readily to producing tangible results which the public can appreciate

* Chairman's address, read before the Section on Preventive and Industrial Medicine and Public Health, at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.
* Because of lack of space, this article is abbreviated in THE JOURNAL by omitting the discussion of the scientific basis of preventive medicine and the development and activities of the organizations for applying preventive medicine, federal, state and city, and the tables on which Charts 2 and 8 inclusive are based, and substituting therefor the introductory remarks that appear above. The complete article appears in the transactions of the Section and in the author's reprints, a copy of which may be obtained on request to the author.

The conduct of the work permits intimate acquaintance between the family in the home and the health worker. The value of this personal contact cannot be overemphasized. It leads to widespread interest in the rudiments of hygiene and public health and is far more effective than attempts at mere law enforcement. If recourse to law in dealing with a few recalcitrants becomes necessary, the local courts can be relied on for convictions.

Practically all of the 140 county organizations in the Southern states gave initial consideration to controlling the filth-borne group of diseases—typhoid fever, hookworm disease, diarrhea and dysentery, and evolved working methods which have yielded satisfactory results. Some of the counties having malaria have directed primary efforts to its control and are making appreciable progress. In other parts of the country the county organization has afforded the most satisfactory approach to the masses in dealing with tuberculosis, child welfare, maternity and infant welfare, venereal disease, and other public health matters. The outstanding problem in each county is emphasized as a means of securing the necessary local support for establishing the organization, and it is featured as the chief activity for from one to three years until definite results have been obtained.

Trend: The county health organizations have given promise of furnishing the rural areas and small towns

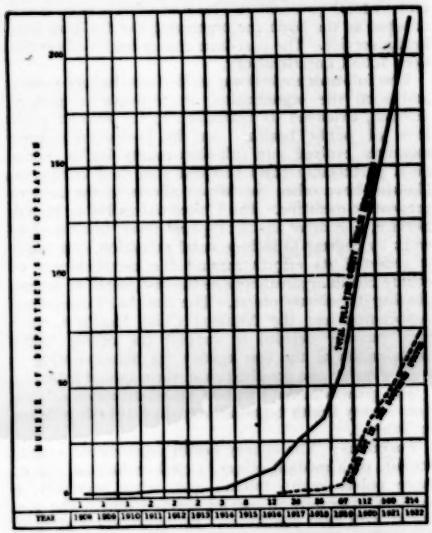

Chart 1.—Growth of full-time health departments in the United States: Lines indicate the number of departments at the close of each year which had been in continuous operation from the time they were first started.

with a health service approaching in adequacy that enjoyed by the cities; of serving as the long arms of state boards of health capable of reaching to the individual home in the rural district; of permitting more or less decentralization of state health work; of making possible the raising of the necessary funds in the easiest manner, and of stimulating community pride in meeting its obligations. The trend among public health forces, federal, state and voluntary, is toward cooperation with counties in the establishment, maintenance and extension of full-time health service and, when practicable, in bringing the health forces of the county and the towns of the county into a compact organization working in close association with the state board of health.

TABLE 1.—*County Health Organizations, 1914-1923*

	1914	1918	1920	1923
Number of county organizations in U. S.....	3	35	43	214
Number of states represented	3	11	16	26
Number of Southern states represented.....	3	8	11	14
Number of county organizations in Southern states	3	33	80	140
Number of county organizations not in South.	0	2	33	74

VOLUNTARY HEALTH ORGANIZATIONS

Popular interest in public health possibilities did not begin to crystallize until the beginning of the present century. The result has been the rapid growth not only of official public health organizations, but also of volunteer bodies seeking the prevention of disease and the promotion of health. We now have 121 national voluntary organizations, twenty-two of which are interested in the general promotion of health, twenty-nine in specific diseases or health problems, and seventy only incidentally in the promotion of health.

The National Tuberculosis Association was established in 1904, and has contributed to the community, state and national resources for the control of tuberculosis. The American Red Cross, the American Public Health Association, the American Social Hygiene Association, the National Child Health Council, the National Organization for Public Health Nursing, the International Health Board, and numerous other national organizations have likewise been created and have similarly contributed to the advancement of public health.

The voluntary organizations have aroused public interest in particular problems by the utilization of facilities beyond the resources of the public health agencies, and have developed effective field methods that could be adopted with a minimum of risk by the official agencies. They have aided the official agencies in securing needed legislation; in disseminating knowledge; in standardizing procedures; in setting up proper standards of training; in hastening legislation, and in other steps designed to assist the public agencies in their growth and in properly meeting their responsibilities.

PRESENT STATUS OF PUBLIC HEALTH IN THE UNITED STATES

ACHIEVEMENTS AND UNFINISHED TASKS

The phenomenal growth in the underlying sciences of preventive medicine has made possible certain striking achievements in the promotion of health, the prevention of sickness, and the saving of life. The masses have been educated through lectures, exhibits and demonstrations, by school instruction, and by papers, magazines and books. This public health education, together with improved economic conditions and the resulting higher standards of living, has undoubtedly contributed to better health and lowered rates of morbidity and mortality. Although mortality statistics have their limitations as indicators of the status of

health promotion, I shall, in the absence of more satisfactory bases for measuring progress, employ them in this discussion.

The status of the general death rate in the United States, as compared with the rate of other nations, is suggested by the figures in Chart 2, quoted from mortality statistics, 1920. The reduction of the death rate for the registration area of the United States from 19.8 in 1880 and 17.6 in 1900 to 13.1 in 1920 makes a favorable showing. A recent bulletin giving the figures for 1921 shows a rate of 11.7, the lowest yet reached by any country except New Zealand, but there are indications that the United States 1923 rate will be somewhat higher.

The reduction in the death rates from diseases against which science has given us effective control methods, as, for example, typhoid fever, is striking, whereas diseases against which science has made little progress show slight or no reduction, and, as in cancer and heart disease, an actual increase has occurred. The situation will be illustrated by Chart 3, which gives the death rate in 1900, 1910 and 1920 from thirteen important causes of death in the registration area of the United States.

Some idea of the achievements and of the unfinished tasks based on present knowledge of the public health organizations will be obtained by noting the figures given in Charts 4, 5 and 6 for three causes of death—typhoid fever, diphtheria, and diarrhea and enteritis—which can be successfully combated. In the left hand column are listed states and cities having low death rates to show what is possible under present conditions, and in the right hand column are listed states and cities having death rates which, despite marked improvement, are still among the highest. These states and cities have clearly defined problems which we know it is practicable for them to carry

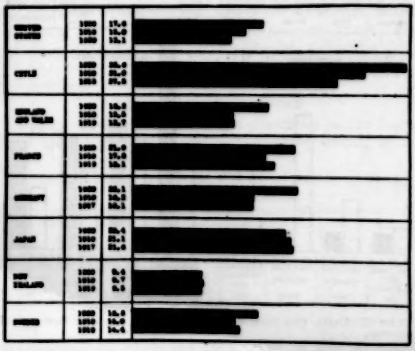

Chart 2.—Death rates from all causes per hundred thousand population for certain countries.

much further toward completion. The actual vanishing point for typhoid fever was reached by Providence, New Bedford and Yonkers, three Eastern cities having a total population of almost 500,000, without a single death from typhoid during 1921.

The census reports do not give statistics by counties, but the typical record of progress in controlling typhoid fever and hookworm disease over a period of from five to ten years in Southern counties, given in the specially collected figures of Charts 7 and 8, is evidence of the practicability of conducting health work successfully even in rural communities.

In noting the death rates, consideration should be given to special conditions which give rise to low or

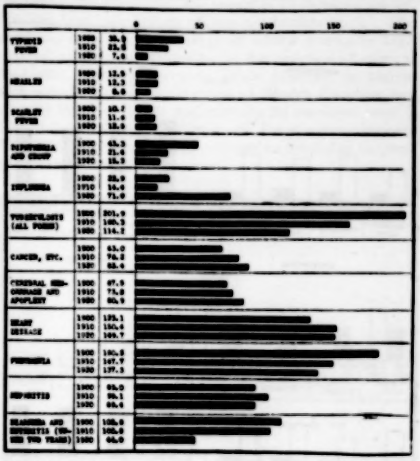

Chart 3.—Death rate per hundred thousand population for the registration area of the United States, 1900, 1910 and 1920, for thirteen important causes of death.

high rates. The South, for example, has its death rate raised by the exceptionally high mortality among negroes, whereas in certain Eastern centers the death rates among the families of the foreign-born are disquieting. On account of such factors it is evident that many cities and states must exert extraordinarily effective control measures. However, broadly speaking, the present status of health work in the United States, as reflected by mortality statistics, is most encouraging.

UNDEVELOPED AND UNOCCUPIED FIELDS OF PUBLIC HEALTH

LIMITATION OF THE PHYSICIAN'S FIELD

The physician in his practice does not enjoy as great freedom as does the health officer in placing his services at the disposal of those whom he might benefit. He is not expected individually to seek out those needing medical care or advice and acquaint them with the extent to which he is qualified to serve, but rather to remain in his office and wait for the people to discover him and his usefulness. Mainly those who are already sick or injured seek his aid. Misguiding influences cause many of this class to fall into the hands of quacks. Often, much time which the physician might with profit to himself and patient devote to preventive medicine is not adequately occupied because the public has not been taught to appreciate the importance and possibilities of preventive measures.

The outlook is encouraging. The modern medical schools are stressing or should stress the training of physicians to meet fully their opportunities in the

practice of preventive as well as of curative medicine. The American Medical Association and many local medical associations are conducting campaigns for the education of the public with regard to the value of periodic physical examinations and other services the competent physician can render toward the promotion of health. The trend indicates that the physician and normal healthy individual are finding common

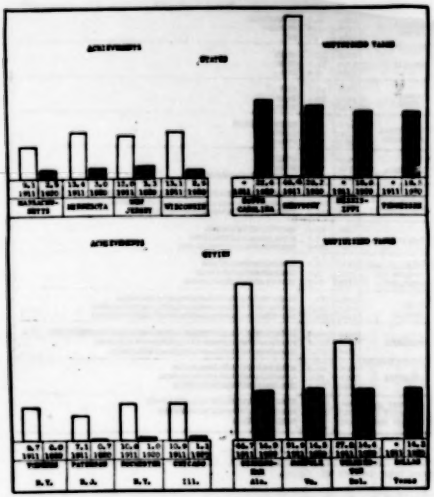

Chart 4.—Death rate from typhoid fever for each hundred thousand of population.

ground in the field of preventive medicine. The health officer and the health nurse should be useful intermediaries in furthering this sane understanding.

LIMITATIONS IN THE HEALTH OFFICER'S FIELD

The efforts that have been made to establish lines of demarcation between the fields of the physician and of the health officer, and to define "state medicine" have been unsatisfactory. In strictly community enterprises, such as water and sewerage systems, the collection of vital statistics, public health education, and the enforcement of quarantine laws, no question has arisen. When, however, the application of knowledge to the prevention of disease, as in hookworm disease, malaria and syphilis, leads to the treatment of the individual by the health workers, there arises difference of opinion as to how far the health officer should go. The same holds true in conducting maternity and infant welfare work, in correcting the physical defects of children, and in life extension clinics for thoses in the midperiod of life. Even in localities where no rigid restrictions are placed on the health workers in matters of individual or community health, the staff is too small to meet fully the opportunities for health service. The health officer is primarily a servant of the community. His sphere extends to the masses. In serving the individual, he does so primarily from the point of view of the best interests of the community. His efforts are directed toward enabling the individuals who compose the community to escape or indefinitely postpone the necessity for curative and repair treatment. There are no restrictions to prevent him from surveying the community and lending service wherever it may be needed. His initiative may find unobstructed outlet, and there is no excuse for idleness.

TYPES OF SERVICE YET TO BE DEVELOPED

Unfortunately, there are many problems not included in the ordinary public health program with which even the more progressive health departments under existing conditions have been unable to cope successfully. Careful surveys in various parts of the country in a number of fields indicate that there is vast loss of life, unnecessary sickness and suffering, and economic waste because doctors of curative and of preventive medicine are not available in sufficient numbers; and even in the more fortunate communities where the supply of physicians is abundant and the health organization is relatively satisfactory, the loss occurs because the fields of the two professions are too widely separated.

MATERNITY AND INFANT HYGIENE

It is estimated that from 20 to 40 per cent. of the women in confinement in the United States have no medical attendant; that 70 per cent. or more have no

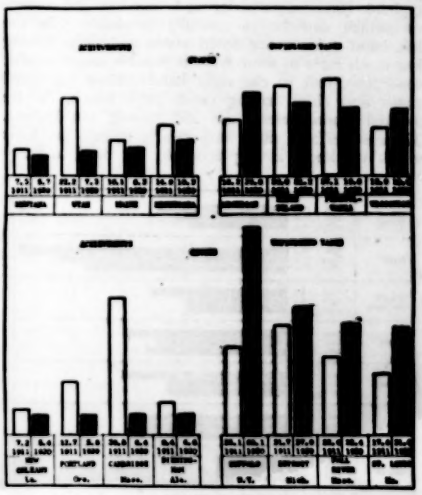

Chart 5.—Death rate from diphtheria for each hundred thousand of population.

advice or instruction during pregnancy, and that even more fail to have a thorough examination to ascertain whether or not they are physically fit to go through the ordeal of childbirth. Dr. W. S. Leathers, health officer of Mississippi, has estimated that 40 per cent. of the births of his state are attended by ignorant midwives. Moreover, there is an appalling and unnecessarily high death rate among infants during the first and second years of life.

CHILD HYGIENE

In the schools, educational facilities placed at the disposal of the children are only partly used, because a large percentage of the children are suffering from remediable impairments—malnutrition, infected tonsils, adenoids, defective vision, deformity, or mental and nervous disorders. The record of absentees and of those who leave school because of discouragement is

TABLE 9.—*Causes for Rejection, U. S. Draft Board*

	Number	Per Cent.
1. Total for all causes	467,694	100.00
2. Alcohol and drugs	2,007	0.43
3. Bones and joints	57,775	12.35
4. Developmental defects (height, weight, chest measurement, muscles)	39,166	8.37
5. Digestive system	2,476	0.53
6. Ears	20,465	4.38
7. Eyes	49,801	10.65
8. Flatfoot (pathologic)	18,087	3.87
9. Genito-urinary (venereal)	6,235	1.33
10. Genito-urinary (nonvenereal)	6,309	1.35
11. Heart and blood vessels	61,142	13.07
12. Hernia	28,268	6.04
13. Mental deficiency	24,514	5.24
14. Nervous and mental disorders	23,728	5.07
15. Respiratory (tuberculosis)	40,533	8.67
16. Respiratory (nontuberculous)	7,823	1.67
17. Skin	12,519	2.68
18. Teeth	14,793	3.16
19. Thyroid	8,215	1.76
20. Tuberculosis of parts other than respiratory	4,136	0.88
21. All other defects	14,314	3.06
22. Cause not given	25,419	5.44

needlessly high. A study by the United States Public Health Service, based on 3,786 school children, shows that "the rate of absence from sickness for children with defects is 22 per cent. greater than the rate for children with no defects; the rate for children with enlarged or diseased tonsils is 12 per cent. greater than the no-defect rate, and the rate for children with adenoids, defective tonsils, etc., associated with other defects, is 31 per cent. greater than the rate for the children with no defects." The examination by various investigators of 237,553 school children, distributed in five states, showed that approximately 70 per cent. of the children were defective; 11.3 per cent. had defective eyes; 20.7 per cent., defective nose or throat; 49.2 per cent., defective teeth; 10.7 per cent., defective skin; 5.4 per cent., defects in nutrition, and 4.3 per cent., deformities.

EARLY ADULT HYGIENE

The physical handicaps of the preschool period linger until adult life is reached. The draft board, in an

TABLE 10.—*Five Principal Causes of Death in U. S. Registration Area, 1920*

	Deaths, 1920	Rate per Hundred Thousand
Organic diseases of the heart	124,143	141.9
Pneumonia (all forms)	120,108	137.3
Tuberculosis (all forms)	99,916	114.2
Bright's disease and acute nephritis	78,192	89.4
Cancer	72,931	83.4

examination of 3,208,444 men, aged 21 and 30, inclusive, found only 2,076,185, or 64.71 per cent., qualified for military service. The causes for rejection of 467,694 registrants are analyzed in Table 9.

BASIC KNOWLEDGE NOT AVAILABLE

The five principal causes of death in the United States registration area are shown in Table 10.

Under the head of "achievements" we were unable to list these five and several other diseases concerning which scientists have not yet pointed the way to effective measures of prevention. Extensive research is the first step toward the solution of the problems, and should be and is being encouraged.

COOPERATION BETWEEN PHYSICIAN AND HEALTH OFFICER IN RESPECT TO UNOCCUPIED FIELDS

From the beginning of the development of preventive medicine, the physician has been the recognized leader. He has been selected to administer health work. The field has now reached a stage at which it may be considered as much a profession as the practice of clinical medicine. The unoccupied fields referred to above, and which Dr. W. S. Rankin of North Carolina has so well described, will undoubtedly be occupied, and it would seem the part of wisdom for the practitioners of clinical medicine and of preventive medicine to come together in frank conference.

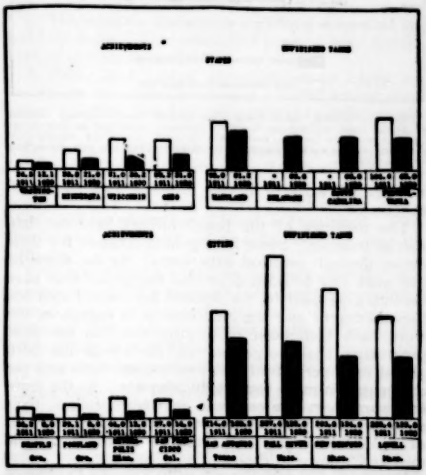

Chart 6.—Death rate from diarrhea and enteritis in children under 2 years of age, for each hundred thousand of population.

The growing public appreciation of the importance of periodic medical examinations would seem to point the way to a solution of the problem which will be fair both to physician and public. A well man is a greater asset to the community and is better able to pay the physician for his services than is a debilitated or incapacitated one. Once the individual is willing to pay reasonable fees to the physician in the practice of preventive medicine, and the physician in turn is equipped and ready on a reasonable basis to render efficient service, the problem of the organized health department, the public agency, will be greatly simplified, and the loss from sickness and physical impairment so conspicuously revealed by recent studies will cease.

A PROFESSIONAL BASIS FOR PUBLIC HEALTH

The progress of the last ten years toward placing public health service on a substantial professional basis has been gratifying. In 1910 only a few states had

full-time health officers, and still fewer had established the essential divisions of service. At present, with few exceptions, all the states have full-time health officers, and about four fifths of them have the essential divisions operating on a full-time professional basis. Moreover, the cities and counties are recognizing the wisdom of conducting health work on a full-time basis, and there is increasing competition among them for the services of workers having training and successful experience.

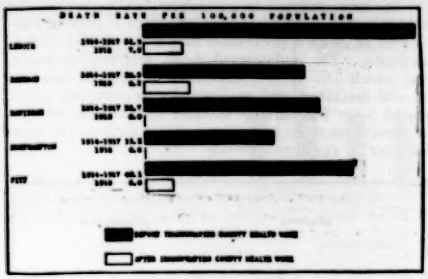

Chart 7.—County death rates from typhoid fever: average number of deaths from typhoid per hundred thousand population in five North Carolina counties for the years 1914 to 1917, before the inauguration of county health work, compared with that for 1918, the year succeeding its inauguration.

The majority of the health officers have not had special training. Some have gained aptitude for their duties through practical experience. As the scope of the work has broadened and as the procedures have become more definite, the demand for trained men has become urgent and the inducements to engage in the work have been made more attractive. In the most progressive health organizations, the service has been placed on a permanent and professional basis and the compensation made reasonably adequate. As the more backward organizations will inevitably follow their example, there may be expected a general improvement of conditions which will influence the most capable men and women to choose it as a vocation.

Extensive educational work will be required to hasten the general adoption of these high standards. Points which need particular emphasis from this standpoint include freedom from unwholesome political influence, security of tenure and adequate compensation.

Freedom from Unwholesome Political Influence.—In a number of states the selection of the chief health executive is a function of a board which has a rotating and overlapping membership similar to that of most university boards. The terms of a majority of the members do not expire during the governor's term of office. In these states, with rare exceptions, the chief health officer and others may expect to hold their positions during satisfactory service, and a high type of professional spirit has usually developed. There are still a number of states in which the governor appoints the health officer directly or indirectly, and in these states, with a few notable exceptions, there has been greater tendency to regard the health officer as a political appointee whose administration will terminate with that of the governor. This influence of politics, even during recent years, has deprived of their positions health officers who have demonstrated real ability and has discouraged many promising men from taking up public health work as a vocation. The man who turns aside from a profession or business to engage in public health work for two or four years to fill a political appointment cannot render the most efficient service. He lacks training, and his period of service is too short to warrant his taking it. Effective service obviously can be rendered only on a full-time basis. The nonpartisan health board having members with overlapping terms, with power to select the health officer, fix the length of his term and pass on his policies, as stated above, has proved the most satisfactory safeguard against political influence.

Security of Tenure.—When the chief health officer is chosen on a merit system, with power to appoint his staff, the subordinate positions are protected as to tenure, provided the organization is efficient and devotes sufficient effort to enlightening public opinion and thus prevent legislative reaction and diminished appropriations. The displacement of competent health officers for political reasons is occurring less often. The hope, it would seem, is justified that within another fifteen years only trained health workers will be in office, and their tenure will be as satisfactory as is now that of presidents and faculty members in our universities.

Adequate Compensation.—Salaries in health work already compare favorably with those in education and other branches of community service.[1] They are, however, below the returns obtainable by successful men and women in business and other professional fields. The upward tendency of the scale needs to be accelerated, particularly in the more backward states and cities, and this problem is almost wholly one of public and legislative enlightenment.

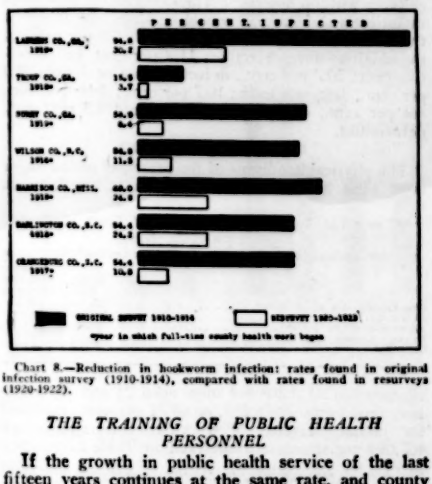

Chart 8.—Reduction in hookworm infection: rates found in original infection survey (1910-1914), compared with rates found in resurveys (1920-1922).

THE TRAINING OF PUBLIC HEALTH PERSONNEL

If the growth in public health service of the last fifteen years continues at the same rate, and county health work continues to spread, increasing difficulty

1. The prevailing salaries now paid throughout the United States were fully treated in the report of the Committee on Salary Standards, American Public Health Association, in the August, 1922, issue of the American Journal of Public Health.

will be encountered in finding the necessary trained personnel. If for each unit of 20,000 inhabitants there should be required a working force consisting of a full-time health officer, two public health nurses, a sanitary inspector, and a clerk-technician, as has been found desirable in the average county of this size, we shall need in the United States, with a population of more than 105,000,000, and allowing for the federal and state services each an additional 10 per cent., more than 7,000 full-time health officers, an equal number of sanitary inspectors, and twice this number of public health nurses, or a total of from 25,000 to 30,000 trained persons.

If twenty years is taken as a reasonable period for this anticipated development, three hundred new health officers for administrative positions, exclusive of those needed for replacement, will be required each year, a number equivalent to about 10 per cent. of all the physicians being graduated at present by the medical schools of this country.

To meet this lack, three principal avenues of training are available: the school of experience, special courses, and university schools of public health.

The School of Experience.—Practically all of the older health officers were medical graduates who entered preventive medicine more or less by accident and secured their knowledge of it through practical experience. It is not minimizing their ability to say that they would have profited by a modern public health course, and they themselves are the first to recognize it. The school of experience is passing, largely because it has developed leaders of vision who see that the future belongs to the university schools. Until these are more fully established, however, and an adequate supply of trained men can be turned out, various devices must be adopted for improving the equipment of the existing personnel.

Special Courses.—A few of the larger and more progressive state boards of health are already providing facilities for supplying in part the special training needed by staff members of the state and local organizations. They offer reading courses and correspondence study courses; and, with the cooperation of private agencies, including the International Health Board, a few of the states are obtaining fellowships to schools of public health for their more successful staff members.

University Schools of Public Health.—All of these efforts at training are but makeshifts, however, against the day when the profession of preventive medicine will require as strict a training as that of curative medicine. The two outstanding centers for this type of training today are the School of Hygiene and Public Health of Johns Hopkins University, and the School of Public Health of Harvard University, both of which have first-class equipment, large faculties and generous endowments, and the advantages of great centers of scientific learning. There were in 1922, however, nine other universities in the United States offering graduate courses in public health, the majority of which have regular courses of study leading to the degree of Doctor of Public Health after one or two years' work. Eventually, let us hope, the number of university schools of public health of quality equal to the schools maintained in law, medicine or engineering will be adequate to meet the needs of the nation.

PUBLIC HEALTH EDUCATION ESSENTIAL

Although the progress of public health education during recent years has been gratifying, the work to be done is still in its early stages. The knowledge of hygienic methods of living during infancy, childhood, adolescence and maturity should be widely disseminated. There should be developed a keener appreciation of individual and community responsibility for cooperating with and supporting the health organizations. When the public becomes thoroughly alive to the importance of health work, it may be relied on through its legislative bodies to make the service attractive for the workers, free them from unwholesome political influences, and on the basis of merit accord them professional standing and adequate compensation; and this transition will in turn afford a compelling incentive to young men and young women of the best type to take up the work as a profession.

SUMMARY

1. The scientific discoveries regarding disease of the last half century have established a sound basis for the field of preventive medicine.

2. Public and private organizations to apply the knowledge have been established. Those having competent full-time personnel have achieved notable results in saving life.

3. The tendency is toward extension of county health service on a full-time basis, with the state cooperating.

4. The physician and health officer occupy fields separated by an unoccupied field in which the saving of life and the promotion of health are neglected. They should give their combined attention to correcting the situation.

5. Public health is a distinct professional field; universities are offering courses of training for it; political interference in policies and tenure is diminishing; compensation is increasing, and public health information is being widely disseminated.

Acute Obstruction of Coronary Artery.—For a long time I had the conception that obstruction of any large branch of a coronary artery meant sudden death. That is perhaps true in the majority of instances. But I have learned that a patient may have acute obstruction of the coronary artery, or some of its larger branches, and may live for days, for months, or may ultimately recover functionally. The reason why these patients were looked upon as doomed to a sudden death was largely because the coronary artery was considered to be a terminal, or end artery. There were said to be no anastomoses that amounted to anything between the right and left branch. If, therefore, the coronary artery was obstructed, as in the descending branch of the left coronary, all that portion of heart muscle nourished by it became inefficient. It was thrown out of commission. The heart must of necessity stop. There were no branches to keep up the circulation. Anatomists have shown there are anastomoses, that are not negligible. Pathologists have shown that some patients who have had obstruction of the coronary artery have lived for months and years, and that the infarcted area has scarred over, and while it has not itself been able to contract in a normal way, it has held and has not yielded in a serious aneurysmal dilatation; and the patient has died from some other disease. Contrary to Cohnheim, other experimenters have had their dogs and other animals live for months and years, even after ligation of large branches of the coronary. Physicians have had patients die with symptoms suggestive of this accident and at autopsy months after an old obstructive lesion has been found.—James B. Herrick, "Practical Points Concerning Diagnosis and Treatment of Heart Disease," *Nebraska State M. J.* 8:301, Sept., 1923.

MENACE OF THE UNVACCINATED*

VICTOR G. HEISER, M.D.
NEW YORK

One hundred and twenty-seven years ago, Jenner made knowledge available which, if effectively applied, would have brought smallpox under complete control. But its adoption was not universal, and millions have died from smallpox since then. The antivaccinationists of the past have largely contributed to such a result, but that is behind us and cannot be remedied. The future, however, is still before us. Shall a few fanatics, with their unproved allegations, be allowed to spread disfiguration, blindness and death to innocent victims of their folly? Should we suffer a person to burn down his house because he believes it noninflammable, if his action menaces the houses of others? Certainly not. Yet we remain complacent when persons promote conditions that destroy lives and happiness.

Those who are indifferent and who fail to have their children vaccinated are also contributors to the continuance of smallpox—that disgrace to civilization. The catastrophe that recently occurred in the Philippine Islands, when more than 50,000 persons lost their lives from smallpox, should be a warning to the people of the United States. The conflagration in the Philippines was made possible by a huge group of unvaccinated children, and the heat of it was intense enough to affect those who were semifireproofed because their vaccination was of too long standing.

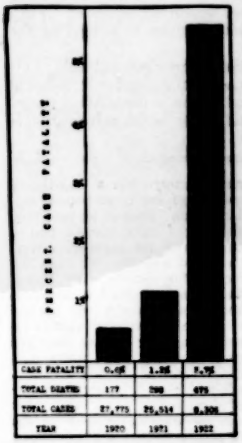
PERCENT. CASE FATALITY
CASE FATALITY 0.05 1.35 5.95
TOTAL DEATHS 177 709 673
TOTAL CASES 37,775 52,514 8,306
YEAR 1920 1921 1922

Chart 1.—Smallpox cases and deaths in 246 American cities, indicating the rapidly increasing virulence, 1920-1922; from Statistical Bulletin, Metropolitan Life Insurance Company, May, 1923.

INCREASE IN VIRULENCE

A huge population susceptible to smallpox is coming into being in the United States. Our comparative freedom from smallpox for many years has created a feeling of security and indifference to protective aids and allowed us to forget that the security we have had was purchased with effective vaccination. That this condition of affairs is a serious menace is well illustrated by the increasing virulence of smallpox. The disease was five times as dangerous in the United States in 1922 as it was in 1920. In other words, 1 per cent. of those who contracted the disease in 1920 died, and 5 per cent. died in 1922. The mortality rate from smallpox has been increasing steadily from year to year.

Denver, thanks to an unvaccinated population, has had an experience that is very illuminating. From September, 1921, to November, 1922, 123 persons died of smallpox, of whom 110 had never been vaccinated, and of the remaining thirteen, not one had been vaccinated within twenty years. Denver also furnishes additional evidence of the increase in virulence of the disease. Among 924 patients, thirty-seven died in 1921, whereas among 802 cases, there were 247 deaths in 1922.

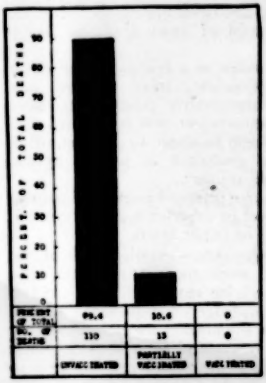
PERCENT. OF TOTAL DEATHS
PERC. OF TOTAL DEATHS 89.4 10.6 0
NO. OF DEATHS 110 13 0
UNVACCINATED PARTIALLY VACCINATED VACCINATED

Chart 2.—Proportion of vaccinated, partially vaccinated, and unvaccinated among the 123 deaths from smallpox in Denver from September, 1921, to November, 1922.

SIDELIGHTS

Recently, in southern California, several chiropractors who undertook to control the disease by their system of therapeutics were responsible for fifteen cases, and Chiropractor Griswold died of smallpox. In Denver, a chiropractor who publicly attacked vaccination contracted smallpox, fled from the city, and died of smallpox in Biloxi, Miss., after starting an outbreak of smallpox in that state, and perhaps giving the disease to other innocent victims en route. Had they been effectively vaccinated, that accident might have been avoided.

In a serious outbreak of smallpox in Kansas City, all the physicians who attended the cases at the hospitals were vaccinated except one eclectic, and he was the only one to contract the disease. Whenever smallpox appears, the antivaccinationists are usually conspicuous by their absence and are only too willing to leave their unvaccinated brethren, whom they have led into the valley of disfigurement and death, to be cared for by those who believe in vaccination.

PROOF OF EFFICIENCY

As a result of the very general lack of effective vaccination, it is a sad fact that it is no longer necessary to go to the distant past for statistical proof. Recent evidence is abundantly available.

The Philippines, prior to American occupation, had 40,000 deaths a year from smallpox. The disease was brought under control by vaccination. Later, a large number of new-born children were allowed to remain unvaccinated, and when, in 1918, the sparks of smallpox began to fall among them, a huge conflagration started which resulted in more than 50,000 deaths and was halted only when effective vaccination was done in advance of the disease flames.

In Germany, in the early years of the nineteenth century, where sometimes 40,000 deaths a year from smallpox occurred, the disease was brought under complete control and reappeared only when disturbed conditions due to the World War made effective vaccination impracticable.

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

Bulgaria nearly freed itself from smallpox, but war allowed a huge unvaccinated population to come into being, with the inevitable result that a serious smallpox epidemic broke out. Vaccination was again extensively employed, and by 1922 the disease was once more under control.

In Russia, where vaccination never has been widely employed, the disease prevails continuously. From 1890 to 1914 an average of more than 100,000 cases occurred yearly. Reports by the League of Nations indicate that in recent years, with lessened vaccination, the rate has been even higher. For the thirteen-year period from 1902 to 1914, 1,397,338 persons were attacked by smallpox, of whom 542,138, or 38.8 per cent., died.

Before the American occupation, Porto Rico was constantly afflicted with serious outbreaks of smallpox. Thorough vaccination was carried out, and since then the disease has occurred but seldom. In the recent small outbreaks, the disease was mild in character.

Cuba has had a similar history.

In recent years, a disease called alastrim, infecting thousands of persons, has appeared in Jamaica, with practically no mortality. Recent studies indicate that alastrim is nothing more than a mild form of smallpox. This view is strengthened by the fact that during 1922 the disease gradually developed a mortality, and the health department reports that it is now 4 per cent. Vaccination protects against the disease. The "pitting" of alastrim is said to be less permanent than that of smallpox.

Recent information from Denver brings still further evidence of the value of vaccination. In December, 1922, there were twenty-one deaths from smallpox; sixteen of the patients had never been vaccinated, and not one of the remaining five had been vaccinated for twenty-five years. As full immunity after vaccination persists for comparatively few years, this may well be considered a cogent proof of the efficacy of vaccination.

BLINDNESS

Early historical records show that much of the world's blindness was caused by smallpox. In countries in which the disease goes unchecked, this is still painfully evident. The bazaars of India are filled with unfortunate victims. The early records in indigent blind asylums of London show that two thirds of the cases were due to smallpox.

In such countries as the United States, England, Norway and Sweden, where effective vaccination has been carried out, blindness from smallpox has been reduced to very small proportions. In the United States it is a rare occurrence. If this horrible disease is allowed to gain a foothold again, we may yet witness in this land conditions of blindness such as exist in Russia today.

FREEDOM OF ATTENDANTS IN THE LONG HISTORY OF SMALLPOX HOSPITALS

In the history of physicians, nurses and attendants who throughout the years have served the unfortunate victims of smallpox, there is no record of any attendants dying of the disease if properly vaccinated, and there are numerous instances in which the disease would have been contracted if vaccination had not been performed. I well recall the case of a nurse in Manila who was on duty at the smallpox hospital. She did not believe in vaccination, but before permitting her to serve in the hospital, I insisted on vaccination, and was led to believe that it had been properly done. Several weeks later she contracted smallpox. She confessed that after being vaccinated she had immediately rubbed off the virus with alcohol, and consequently had had no protection against the disease. In my experience in dealing with thousands of cases of smallpox, no one connected with their management who was effectively vaccinated ever contracted the disease. Thus history repeats itself under similar circumstances throughout the world. "During an epidemic of smallpox in 1871, out of 100 smallpox attendants at Homerton (England) all but two were revaccinated, and these two took smallpox." Dr. William M. Welch of Philadelphia states that during an experience of thirty-four years at the municipal hospital, in which time some 10,000 cases of smallpox were treated, there was no instance of a physician, nurse or attendant who had been successfully vaccinated contracting the disease.

A DISEASE OF CHILDHOOD

Smallpox occurs most frequently among children under 14 years of age. If all children could be effectively vaccinated, epidemics of smallpox would probably never occur. At present, there is an increasing lack of vaccination among school children, and they constitute a national menace. Is it right to sit complacently by and allow this disease again to gain a foothold, when a very simple weapon is at our disposal which would make the occurrence of such a catastrophe impossible?

Modern safeguards have removed every legitimate objection to vaccination. The virus is made from calves, and consequently is incapable of transmitting human blood diseases. Laboratory tests carried out under the supervision of the United States Public Health Service insure a vaccine free from dangerous impurities. Even under the worst conditions of the past, all the accidents attributed to vaccination would be only a small percentage of ordinary street casualties. Among some 10,000,000 vaccinations performed in the Philippine Islands, there was no loss of life or limb or demonstrable injury to health.

DEPENDENCE OF INCIDENCE ON THE ATTITUDE OF THE PUBLIC

Force and Leake[1] show that the incidence of smallpox in the United States is directly related to the public attitude toward vaccination. In New York, where the sentiment against vaccination is not very strong, the rate is 0.05 per thousand, whereas in Minnesota, where sentiment against vaccination is more pronounced, the rate is 2.46, or nearly fifty times as great. The hope of bringing smallpox under complete control in the United States resides largely in effective vaccination of children. In Minnesota, this is seriously interfered with by law, which decrees that "no law shall compel the vaccination of any child." Briefly, it may be stated as axiomatic that in a country which is exposed to smallpox from without, the incidence will vary in direct proportion to the effectiveness of general vaccination. Every community is in a position to determine the amount of smallpox it wishes to have. Vaccination is an economical measure easily within the reach of all and brings protection.

1. Force, J. N., and Leake, J. P.: Pub. Health Rep. 36: 1975 (Aug. 19) 1921.

WHAT IS EFFECTIVE VACCINATION?

In the past, no doubt, many have been registered as successfully vaccinated when such was not the case. It has happened all too frequently that lymph has lost its potency through age, or that the vaccination was not properly done. No vaccine should be used which has not been recently tested as to its efficacy by a registered laboratory. In the tropics, for instance, where vaccine is very susceptible to deterioration on account of high temperature and other untoward conditions, much time has been lost by using lymph that was not effective. In Java it was found that until the lymph was strengthened by passage through rabbits and water-buffalo, vaccination did not produce good results. It is highly desirable to have information as to what would constitute an effective test of a successful vaccination that would be applicable to field conditions. As Pirquet has shown, there is every reason to believe that whenever the characteristic periodic reactions follow the application of antivariolic lymph, immunity to smallpox follows. But under field conditions, it is not often practicable to follow these reactions. Usually a scar is accepted as satisfactory evidence. Others with larger experience are of the opinion that a "pit" is the only reliable evidence of successful vaccination. If a biologic or other reliable test suitable for use under field conditions could be developed, it is probable that the number of persons who in the past have been regarded as successfully vaccinated and who still have contracted smallpox would be further reduced; and, what is more important, it would serve as a better guide by which to judge whether primary vaccination had been successful and when not successful, to pave the way for immediate revaccination.

PROPER COURSE FOR HEALTH OFFICERS

In the United States, the duties of the health officer are becoming so complex and making such demands on his time and funds that he finds it impracticable to attend to even the important duties. In a recent visit to Holland, I was greatly impressed with the fact that the private practitioner carried out a large part of the responsibilities that here fall on health officers. Much of public health education comes from the physician directly to his patient. Vaccination, for instance, is done entirely by the practitioner. Why should not the American health officer endeavor to avail himself of the assistance which the profession would gladly give? The private practitioner would also have vaccinations under observation more frequently and could note the characteristic successive changes that take place in effective vaccination. I believe that the cause of health would be more effectively served if, in the future, health officers would take the offensive instead of remaining on the defensive. Think of the endless time that is consumed by the profession every year in defending itself against the attacks of the antivaccinationists, antivivisectionists and others. A little more educational effort directed toward legislative bodies would serve to demonstrate that these attacks are endangering the very life of the nation, and legislation should be insisted on which would render propaganda inert. If health officers and the medical profession are faithfully to discharge their obligations to the public, they must be allowed more time to carry out constructive measures, instead of constantly wasting their time in defending themselves. The wanton destruction of life by the actions of those who ignorantly oppose well-authenticated facts must not be tolerated in the future. There is no justification for a condition that will permit fifty times as much smallpox in one state as in another. The disease is within human control, and misguided fanatics should not be allowed to take action that results in the useless destruction and maiming of human beings.

SMALLPOX AND VACCINATION*

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Twenty-five years ago, the surgeon general of the U. S. Marine Hospital Service, in his annual report, said:

> Smallpox is a disease so easily prevented by vaccination that the smallpox patient of today is scarcely deserving of sympathy, the improvement in the preparation of pure vaccine lymph having been so great that there is now little cause for fear of untoward results from vaccination. The spread of the disease also is so easily prevented under proper management that it is a disgrace to the sanitary authorities of any state, municipality or locality whenever this disease is permitted to get beyond their control. If the inability to manage the disease is due to a want of funds, then this lack of necessary provision is a disgrace to the state or locality infected.

Unfortunately, we are faced with that disgrace. Smallpox is abroad in the land, and while in general it is milder than when the words just quoted were written, the experience of Kansas City and Denver shows that many of our centers of population are subject to the menace of a very fatal and disastrous invasion.

DIAGNOSIS

The prevention of smallpox is so closely related to vaccination that the one cannot be discussed without the other. We must not, however, neglect a most fundamental part of the campaign, namely, the recognition of the disease. It is not enough that official diagnosticians and experts be familiar with the up-to-date clinical diagnosis of smallpox. Every practitioner should familiarize himself with it sufficiently to suspect smallpox in the atypical case. It was a series of entirely unsuspected mild eruptions among actual hospital patients that gave the virulent Dresden outbreak of 1918-1919 its flying start. One cannot refrain from obtaining the impression in reading the German smallpox literature that in Germany much attention is paid to laboratory methods of diagnosis and too little attention to the prompt clinical methods insisted on by Ricketts [1] and Wanklyn.[2] Thus, perhaps, thorough isolation and vaccination of persons having contact with smallpox patients is somewhat delayed. The average length of time between onset and isolation in hospitals in Germany for 1910, 1911, 1914, 1916, 1917 and 1918 was 5, 5.9, 6.4, 6.1, 5.2 and 6.6 days, respectively[3]; in the Glasgow, 1920, outbreak [4] the average time was 4.7 days. Probably only celerity in diagnosis and emergency vaccination keep smallpox down in the

* From the Hygienic Laboratory.
* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Ricketts and Byles: The Diagnosis of Smallpox, New York, 1908.
2. Wanklyn, W. M.: How to Diagnose Smallpox, London, 1913.
3. Breger: Mitt. a. d. Reichsgesund. **20**: 207, 1921; **22**: 5, 1922; Mitt. a. d. k. Gesund. **16**: 1913.
4. MacGregor, A. S. M.: Proc. Roy. Soc. Med. (Sect. Epidemiology) **14**: 43, 1921.

otherwise largely unvaccinated masses of London. In Germany,[3] for the twenty years before 1916, there were 4,627 cases with a case mortality rate of 13 per cent.; during the five subsequent years there have been 11,180 cases and 15 per cent. fatality. This is not high in a population of 60,000,000 in close touch with such neighbors as Germany has to the east. In Russia,[4] there have been from 55,000 to 165,000 cases each year for the last twenty years. Important as is the proximity to and the communication with thickly settled and poorly vaccinated communities in which rapid diagnosis and isolation are not carried out, even in such a situation the influence of the thoroughgoing vaccination of the community itself is preponderating. For example, the annual number of deaths from smallpox in Germany, which was between 1,251 and 84,885 for the sixty years preceding the vaccination and revaccination law of 1875, has been between five and 1,150 for the forty-five subsequent years. A smallpox incidence rate of 150 cases per hundred thousand during the Dresden outbreak [6] in 1919 may seem high for a community supposedly well protected with obligatory infantile vaccination and revaccination at the age of 12, but this must be called low when compared with the rates of 3,000 and 4,000 per hundred thousand which the same city had during the epidemics of 1863-1864 and 1870-1872 before such vaccination enforcement.

Terms such as alastrim, kaffir milk pox and amaas have lately come into use. Does this mean that we must differentiate a new disease from smallpox? In each case, when such terms as these were originally used, it was the mildness and low fatality of the outbreak which suggested that the disease was a new one. Other supposed differences from smallpox were then picked out, such as a somewhat more superficial location of the lesion, and frequent absence of pitting. Does this mildness constitute a valid difference so that we are justified in calling the milder forms a new disease? It would not be so with other infectious diseases, such as scarlet fever, typhus fever or Rocky Mountain spotted fever. The latter varies in different strains practically from 0 to 100 per cent. fatality, but there is no doubt in the minds of those most familiar with the subject as to the essential identity of the disease. In the case of smallpox there is no point at which one may draw a line, classing as alastrim all outbreaks with a lower fatality, and as true smallpox all with a higher. The original description of alastrim [7] gave its fatality as 0.5 per cent; that of amaas [8] is 3 per cent. or more.

The West Indian disease in Haiti [9] varies in fatality from 0 to 9 per cent. In the United States, outbreaks could be cited having any degree of fatality, from the occurrence of several thousand cases without a death to a rate of from 30 to 40 per cent. In the relatively unvaccinated city of Leicester, England, the 1904 outbreak [10] had a 1 per cent. fatality; in Germany the unvaccinated died at the rate of 40 per hundred cases,[11] and in Japan[12] up to 70 per hundred. There is no characteristic case mortality rate for smallpox, and a mental picture of the disease which fits only one type of epidemic is incomplete. This much is evident; it is also evident that if we admit alastrim as a disease entity we should have to call the greater part of the smallpox occurring in the United States alastrim. But whenever those thoroughly and continuously familiar with smallpox and its modern diagnosis[13] have any experience with these variously called mild types, they have no hesitancy in pronouncing them true smallpox, whether in Australia[14], South Africa[15], Brazil[16], the West Indies[17] or England[18].

The memorandum of the ministry of health for July, 1922, gives the official English conclusion of the matter after a thorough investigation by medical officers of the ministry and other medical experts with exceptionally great experience of smallpox. From their reports it is evident that "the outbreaks of this disease of mild clinical type, without fatalities even in the unvaccinated, have been outbreaks of smallpox and are to be classed with other epidemics of mild clinical type which have frequently occurred in the history of smallpox both in England and abroad."

Unfortunately, the opinion of experienced observers in such matters does not usually attract as much attention as the proclamation of a new disease. It is to the great credit of the medical profession of the United States and Canada that they have generally recognized the mild types as true smallpox. In South Africa, Mitchell [15] records four outbreaks which were mild at first and became virulent. A similar increase in fatality took place in Haiti[9], but, in general, in smallpox, as in other infectious diseases, strains tend to breed true and maintain a fatality rate within one range, at least for the relatively short length of time during which they may be assumed to be unmixed strains.

Aside from the clinical evidence, we have completed some experiments which will soon be published showing the immunologic identity of alastrim with the smallpox of the United States.

VACCINATION

The mild types seem to prevail particularly in poorly vaccinated communities; good vaccination and revaccination will apparently prevent them entirely. Thus, the presence and propagation of a mild strain of smallpox is generally indicative of a very poor vaccinal status of the population. At times, as in Kansas City and Denver, it seems as if the severe form obliterates the mild; measures which are completely successful against the mild form are not successful against the severe; increased contagiousness more or less parallels the increased virulence. If one has to deal with only the mild strains of smallpox, the duration of immunity following vaccination can be taken as much longer than would be safe in a severe epidemic. In Kansas City, two cases occurred in persons vaccinated successfully with good scars, only two and one-half years previously. Birdwood,[19] speaking from his experience with the virulent types of the disease at the London Smallpox Hospital, estimated that a person vaccinated only once, in infancy, has in more than 50 per cent. of the cases lost all his immunity by the time he is 21 years old.

5. Mühlens: Ztschr. f. Hyg. u. Infectionskrankh. **99**: 1 (Feb. 27) 1923.
6. Einseidel: Zentralbl. f. d. ges. Hyg. **2**: 510 (Dec. 25) 1922.
7. Ribas, E.: Rev. med. S. Paulo **13**: 323 (Sept. 15) 1910.
8. De Korte, W. E.: Lancet **1**: 1273 (May 7) 1904.
9. Melhorn, K. C.: U. S. Nav. M. Bull. **15**: 492 (April) 1921. Brown, C. J.: Ibid. **15**: 695 (July) 1921.
10. Millard, C. K.: Proc. Roy. Soc. Med. **8**: 40 (Nov. 27) 1914.
11. Plange, Walter: Ztschr. f. med. Beamte **33**: 112 (March 20) 1920.
12. Kitasato, S.: Vaccination and Smallpox in Japan, J. A. M. A. **56**: 889 (March 25) 1911.
13. Ricketts and Byles (Footnote 1). Wanklyn (Footnote 2).
14. Armstrong, W. G.: Proc. Roy. Soc. Med. **8**: 1 (Nov. 27) 1914.
15. Mitchell, J. A.: Lancet **2**: 808 (Oct. 14) 1922. Walker: Ibid. **2**: 564, 1923.
16. Mariante: Arch. Rio-Grandenses de Med. **3**: 202, 1922.
17. Clark and Low: Brit. M. J. **2**: 713, 1903. Scheult: Proc. Roy. Soc. Med. **1**: 229, 1908. Jones: J. Trop. Med. & Hyg. **25**: 321.
18. McVail: Proc. Roy. Soc. Med. **8**: 33, 1914. Boobbyer: Med. Off. 137, 1922. Wanklyn, quoted in Report of Medical Officer of Health for Essex, p. 14, for 1921.
19. Birdwood: Sixth Report, Royal Vaccination Commission, 1893, p. 592.

The duration of immunity appears to be particularly short in the negro,[20] both as regards protection from smallpox and as regards revaccination reactions. The Glasgow figures of 1901-1904 show [21] that even if as high as 60 per cent. of a population have been recently vaccinated, a smallpox epidemic can prevail among the other 40 per cent. within three years. Kretzer,[22] during the Riga epidemic, which had a fatality rate of 60 per cent., observed a moderately severe attack in a child thoroughly vaccinated within three years. It is to be remembered that these are the unusual cases, but that they do occur; they indicate not only an infection with higher striking power, but also perhaps an individual whose body cells are not susceptible of much defensive education. In general, the only protection to be used is obligatory vaccination at least once in a lifetime, with voluntary vaccination—to secure an immune reaction if possible—from every seven to ten years in the ordinary American community, and this will be ample protection for many persons during the most severe epidemics; but if virulent smallpox breaks out, a revaccination should be performed with potent virus even though the last vaccination was no more than one year previous. While primary vaccination causes a temporary inconvenience of a few days, and is not without the small risk which attaches to any lesion of the skin, the risk is infinitesimal as compared to the safety secured by this simple procedure. As far as any permanent undermining of the health is concerned, such evidence as there is, is all in the other direction. Kinloch,[23] by keeping a record of the vaccination scars on all children under 5 years of age admitted to the Glasgow Fever Hospital, learned that for every disease treated—scarlet fever, diphtheria, measles, whooping cough, erysipelas, bronchopneumonia and typhoid fever, the vaccinated children had a much higher proportion of recoveries than the unvaccinated.

Susceptibility to vaccination is, for all practical purposes, universal, though varying in degree according to acquired immunity and also according to occasional slight natural resistance. In other words, potent vaccine virus always gives a reaction; however, virus which is so inert that primary vaccinia cannot be obtained with it in previously unvaccinated subjects may still give the immediate reaction on immune subjects. The immune reaction or immediate reaction is no criterion of the potency of the virus.

The question has been raised as to whether the slight papule constituting the reaction of immunity in itself increases the immunity of which it is the evidence. This has not been conclusively shown, despite the studies on rabbits and men at Bern; [24] but the German statistics [3] for 1917 and 1918 show that persons giving immune reactions on revaccination with virus of good potency have at least as durable an immunity from death from smallpox, if attacked, as have those giving the more pronounced reactions of vaccinoid or vaccinia.

It is interesting to note that the German officials have recognized that the immediate reaction, which as an administrative criterion of immunity was first used in the United States,[25] does indicate the highest degree of immunity.[26]

20. Becker: Arb. a. d. k. Gesndhtsamte. **14**: 638, 1898.
21. McVail, J. C.: Brit. M. J. **1**: 408 (April 5) 1919.
22. Kretzer: Ztschr. f. Hyg. u. Infectionskrankh. **92**: 273, 1921.
23. Kinloch, J. P.: Lancet **1**: 993 (June 30) 1917.
24. Sato: Ztschr. f. Immunf. **32**: 481, 1921. Fugii: Ibid. **33**: 443, 1922.
25. Force: California State J. M. **11**: 290, 1913. Leake, J. P.: Mil. Surgeon, to be published.
26. Gins: Hyg. Rundschau **29**: 384, 1919.

In the Kansas City epidemic, three physicians were stricken, all very severely.

One had not believed in vaccination. He contracted the infection in some unknown way, a rapidly fatal purpuric attack. On the evening before he died, though in extreme pain, he arose from his bed and vaccinated his family, thus giving them the protection which he had failed to obtain.

The second physician visited the smallpox hospital in company with a number of other physicians during a medical convention; in spite of his profession he had never had a successful vaccination. His was possibly the most severe case in the city to be followed by recovery.

The third physician had been vaccinated and revaccinated in Germany forty years before, and showed five good pitted scars. Consequently, he did not revaccinate himself until ten days after exposure to a case, and gained no protection. In Germany, too much reliance has been put on the routine revaccination at 12 years of age; for example, during the 1919 smallpox epidemic in Dresden, when there were 865 cases and 122 deaths, less than 15 per cent. of the population could be persuaded to be revaccinated, and the incidence and fatality were consequently high in the older age groups, among whom the protection from childhood revaccination had been largely lost. In Kansas City, more than enough vaccine was distributed to vaccinate each inhabitant, though there was a great waste through poor storage and nonuse of virus, and through repeated revaccination of the same individual instead of use being made of the two-day observation for the reaction of immunity. It is unfortunately true that, in the absence of some such compelling motive as the immediate danger of fatal smallpox, or the required school vaccination, we postpone and neglect these sanitary precautions. It may be too late if one waits until actual exposure takes place.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HEISER, AND LEAKE AND FORCE

DR. HUGH S. CUMMING, Washington, D. C.: Dr. Heiser has had an experience and an opportunity for observation of smallpox that has perhaps been unexcelled by any medical officer in the world. There is nothing for me to do except to reemphasize, first, the necessity for proper laws regarding vaccination; secondly, the necessity for seeing that those laws are carried out; and thirdly, the importance of the physician's appreciating the operation of vaccination, both as to its technic, and, more, as to the necessity for careful observation as to its result, and recording the observation. I am delighted to have this question of smallpox and vaccination treated by men who have investigated it with such care and thoroughness as Dr. Leake and Dr. Force have.

DR. G. K. OLMSTED, Denver: There is no more potent factor in the broadcasting of a public health program than an epidemic such as we had in Colorado. Unfortunately, but truly, for twenty years the public has had to be reeducated. When there is an epidemic, the health program of preventive medicine can be carried out very successfully. Then comes a period of indifference, and finally of active opposition. In Colorado we had a rather virulent type of smallpox, probably brought into the state by the peon laborers of Mexico, who come into the beet fields of Colorado during the early part of the year, and afterward return to the larger cities to congregate in places where the spread of such diseases is very common. This type was of such a virulent character that in many cases the hemorrhagic form seems to have been the only form, without any apparent eruption. I saw many of the cases myself. The period of attack was very rapid, and the mortality was startling. The public health officers of Denver were unable to cope with the antagonism of the

cults, and particularly of the chiropractic cult, so that the vaccination of children was decried by almost every newspaper. The city officials appealed to the state board of health, and we appealed to Surgeon-General Cumming, who sent Dr. Perrin, one of the most efficient of his staff. In less than a week's time the officials of both the state and the city and the physicians were ready to help us, and in a surprisingly short period of time we were able to vaccinate almost the entire school population. Immediately after the school children were vaccinated, the epidemic ceased. Dr. Force brought out some facts in regard to the initial or primary cases that are sometimes not recognized. Out of 1,400 children who had been vaccinated within a period of from three to five years, more than 50 per cent. had a beautiful primary take.

DR. T. B. BEATTY, Salt Lake City: In Utah we have enjoyed the distinction of having had more cases of smallpox in the last twenty years than any other state in the United States. I am not proud of that fact, but there is a reason. When smallpox made its appearance in this country in its mild form, it came to Utah. There occurred an opposition that was extremely effective, propaganda that was far reaching. The result was that the state was thoroughly converted against vaccination, and since that time the disease has gone along on its way practically unresisted. During the first five or six years, the disease prevailed extensively. From 1906 to 1921 we had 25,000 cases, with a mortality of seventy-seven. Last December we had an outbreak that was very severe. It would take one back to the eighteenth century. One could smell it in the hospitals, even if one did not see it. I thought the opportunity excellent to do a little propaganda. I could not get a photographer to take pictures of those patients. I am not much of a photographer, but I had to do it. I took pictures of six or eight cases of that horrible type. We called attention to the fact that this was not the sort of smallpox that people had grown to ignore. Then the first block occurred. The newspapers would not mention it. One newspaper manager told me that he thought the situation was very grave, and added, "But if we mentioned it, the business interests would punish us bitterly." So they did not even mention smallpox in the death notices. That community went about unmindful of what was transpiring. There had been two deaths, and then it got started. An undertaker who scorned vaccination took care of one of the bodies, and he died. A Christian science healer attended a case, and she died. She was sent to cure an inoffensive child who had not been vaccinated. The outbreak did not cease until fifteen people died out of forty who had the disease. Education did not work. We can talk ourselves blind. Dr. Heiser's statistics have been used. They brought up the League for Medical Freedom. They spread broadcast those missionary statistics from the Philippines purporting to show that vaccination was a failure. I had films made, and some moving picture houses agreed to show them. The picture was shown at two shows, and then the Christian scientists and the chiropractors and other cults of that kind appeared in great strength—I think there was a petition of 2,500 names—and threatened to boycott the theater if it did not instantly withdraw the film. It was withdrawn. The manager was sympathetic, although the owner was not. Then I had these photographs made into slides, and we exhibited these horrible cases of smallpox on the screen. Those people went away, and they spread the news, and the result of the circulation of the photographs was that 60,000 people were vaccinated in Salt Lake City. The legislature was then in session. Those pictures were shown to the legislators and frightened them so that they forthwith became vaccinated. But, when we proposed to repeal the law, they would not do so, and it is still on our books. We are still unvaccinated in Utah, outside Salt Lake City.

DR. LOUIS I. DUBLIN, New York: My office has for five years tried to keep in touch with the smallpox situation all over the country. Dr. Heiser has called attention to some figures that we collected for a group of cities in 1920, 1921 and 1922. They tell a striking story. We have also the figures for the same years in a group of states, and they too show not only that smallpox is increasing in virulence, but that the number of cases is very large. The reporting of smallpox is still incomplete, especially in the Western states. Many communities are anxious to keep the occurrence of smallpox cases quiet and unrecorded. The disease is also often difficult to diagnose, especially the milder cases that simulate chickenpox. Many such cases are not reported. It is quite possible that more than 100,000 cases of smallpox are occurring each year in the United States. The great majority of these cases are mild. The severe cases are, for the most part, limited to the Western states. But every now and then fatal cases appear in the Middle Western states, in the Southern states and occasionally in the Eastern states. I believe that, having in mind what has occurred in the Western states during the last ten years, there may well be a virulent outbreak of smallpox in some of the Northern and Eastern states. That is why I would emphasize the tremendous importance of smallpox as a health menace at the present time. Coupled with the spread of the disease and the increasing virulence of the cases, there is also the gradual breakdown of the safeguards against smallpox. Even in such places as Massachusetts, New Hampshire and other Eastern states which have had an admirable record in the past, efforts have recently been made to destroy the compulsory feature of the law requiring vaccination as a condition for the entry of children in school. Bills similar to those that have been enacted in the West have been presented for passage in these Eastern states, and in some of them have actually passed one or another of the houses of the legislature. In other words, the forces opposed to public health are trying out their strength in states where we believed they had absolutely no chance, and every now and then they almost carry their point. There is an insidious campaign against public health going on all over the country. There is strong financial backing for breaking down the laws that protect us against smallpox and other communicable diseases. Wherever one goes, whether California, Oregon, Massachusetts or New Hampshire, the arguments are always the same. The antis have the same literature. They make the same distorted references to the supposed failure of vaccination in the Philippines and in other places. The arguments and the campaign against vaccination originate from one source and are directed from one headquarters. The point to remember is this, that throughout the United States there is a never ending campaign for the destruction of our protective health legislation. I want to emphasize the point made by Dr. Heiser that we are face to face with a most alarming situation. What is needed at present is a militant spirit by the health officers and by the public against these enemies of the public health. We must fight them and defeat them wherever they show their heads, and not merely stay on the defensive.

DR. PAUL A. TURNER, Seattle: I want to inject a little ray of hope into the discussion of the situation by citing what happened in Washington. We have a law that specifically states that we cannot compel vaccination. The board of health, however, wrote a rule that provides that no child, teacher or janitor shall attend school when smallpox exists in a community without presenting satisfactory evidence of having been successfully vaccinated within seven years. Thereafter, when four or five cases were discovered in a certain city we proceeded to vaccinate the school population. We were not compelling vaccination. We merely stated that they would have to stay out of school and isolated at home for eighteen days, unless they were vaccinated. About 90 per cent. of the school children were immunized in four of our large cities. In spite of what Dr. Beatty said, in 1919, Washington, in proportion to population, led the country in the incidence of smallpox, and had a considerable number of deaths. The year after we started our vaccination campaign, our rate dropped 50 per cent., and we had only one death. Of course, there is always a fight, and, when we vaccinate entire cities we are liable to get a certain amount of criticism. They took us to court in Olympia, the capital of the state, and the trial really resolved itself into a question of the power of the state board of health to pass rules and regulations. The court upheld our regulations. It was appealed to the supreme court, and a very sweeping decision was passed down. The supreme court said that the rules and regulations

of the state board of health were binding on the people and on the courts as well, and could not be reviewed by the court.

Dr. W. M. Miller, St. Louis: I have very intimate knowledge of legislative work in Missouri, Kansas, Oklahoma and Nebraska. The opposition is not merely opposition in the way of smallpox legislation. It extends to child hygiene and all kinds of health legislation. It is a premeditated, thoroughly worked out and controlled opposition that emanates largely, so far as my observation goes, from Boston. It goes so far, and I am told that in certain states in the farther West they have even gone to the point of attempting to secure the nomination of governors of states, that they have secured the presiding officers of state legislative assemblies and chairmen and members of legislative committees. They seek to control boards of education, and leave nothing undone in a preliminary way to secure their point. In certain volunteer organizations which are quasipublic health institutions, they in one way or another attempt to secure control to attain their point. They are opposed to any progressive health or health educational legislation. I want to say this much emphatically, because I know of what I am speaking.

Dr. M. R. Bren, Palo Alto, Calif.: Dr. Heiser mentioned the smallpox epidemic in the Philippines; having been there during that period, I think my experience may prove of interest. I was in command of a military hospital in one of the mountain provinces, and had a small outbreak of smallpox on the station. The people inhabiting this section were semicivilized, non-Christian tribes, lightly touched by American influence, primitive in their customs and mode of life. The first case was in the child of one of my native sanitary privates. It died of virulent smallpox before I was even informed of its being sick. I decided on immediate vaccination of the entire camp, beginning with the native section, or barrio, where the natives live in houses constructed of any available material, especially the tin from gasoline cans. To accomplish this it was necessary to surround this portion of the reservation with a cordon of soldiers to prevent persons leaving, and to beat the bushes for those hiding when news of the intended vaccination spread. The soldiers were left until the last; they being protected by compulsory vaccination on each reenlistment, which is every three years. With my small force I was able to complete the vaccination of the native population, approximately 1,500, in one day. Ten new cases developing in the following week, and there being comparatively few "takes," I suspected the possibility of loss of potency in the vaccine, owing to the tropical conditions mentioned by Dr. Heiser. Fresh virus was ordered, and all persons not showing an active reaction from the previous vaccination were revaccinated. After that second vaccination, we had no more smallpox. There was no smallpox among the soldiers because they were thoroughly protected. The deaths, three in number, occurred in young children and young adults. The older people, the number of whom I do not quite remember, that had the disease had evidently been protected by Dr. Heiser years ago when he had the job of vaccinating the whole Philippine archipelago, and they had not been revaccinated. Therefore, those that contracted the disease had it in a mild form. But the unvaccinated had a very severe confluent type. This demonstrates that when the conditions existing in a military camp prevail, smallpox is stopped. In cities where we are bothered by the legislatures and what they have decided we can do and what we cannot do, we are confronted by a hard proposition. It is absolutely one of education. We are fighting well organized, evil influences. When this League of Medical Freedom comes out with such distorted statements, that incident in the Philippines will prove just what those statements are worth.

Dr. H. O. Jones, Chicago: The League of Medical Freedom and the Anti-Vaccination Society and the other objectors fight us in Chicago the same as they do elsewhere. We have, fortunately, Dr. Spaulding at the head of our bureau. He is very active in fighting smallpox. The board of education excluded those who had not been vaccinated from the schools, and two of our schools were sued by members of families who had been vaccinated, and the court sustained the board of education and the board of health in their action, excluding from school those who had not been vaccinated. The court further found that one case in a community would be considered as a pending epidemic.

Dr. Victor Heiser, New York: Real danger threatens: Unless we take more effective precautions in this country against smallpox, we are going to be in for a very bad time. Instead of attempting health work that has doubtful value, let us first employ the measures we know will produce beneficial results. Then, if there are funds and time for the other public health activities, let us take those up. Lack of vaccination is heading toward catastrophe. Every health officer ought to consider it his solemn duty to vaccinate those for whom he is responsible. Unless that is done effectively, we are likely to have in the United States the same disaster that happened in the Philippine Islands, where more than 50,000 innocent persons lost their lives.

Dr. John N. Force, Berkeley, Calif.: We hear a great many comparisons nowadays between the legal method and the educational method of getting things done. Dr. Leake and I were very much interested in the question of the relation of state laws to the occurrence of smallpox in these states for a period of years. Accordingly, we selected twenty states in which smallpox had occurred during the five years 1915-1920, and we studied their smallpox morbidity statistics with relation to their laws. We are accustomed to hear the American people spoken of as being somewhat lawless; but our studies showed this relation. In every state where there was a good vaccination law on the books, the smallpox morbidity was correspondingly low. One of the most striking examples of that was the state of South Carolina, which, surrounded by states of high smallpox incidence, had a very low smallpox incidence, comparable to that of the Northwestern states. On reading the law of South Carolina, and on communicating with the health officer of that state, we found that the law was extremely drastic in its compulsory features. There was an infant vaccination, a school vaccination, and another vaccination along about the age of 14 or 15. The result was that South Carolina, surrounded by high incidence states, had a very low smallpox rate. The reason we did not include Utah was that we could not get the figures for the five consecutive years. We wanted these very much, because Utah had an extreme antivaccination law. If there is a good law on the books the American people seem to stand by it, and the smallpox is low in the state where there is a good law on the books.

LOCAL ANESTHESIA IN THE UPPER ABDOMEN

FACTORS ON WHICH SUCCESS DEPENDS *

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MINNEAPOLIS

The preference of local over general anesthesia is predicated on the same factors, regardless of the region of the body on which surgery is to be performed. The upper abdomen, however, often presents pathologic conditions of sufficient gravity to make it desirable for the surgeon to avoid increasing the patient's handicap while the necessary operative procedure is being carried out. The attributes of local anesthesia are such that surgeons have for a long time availed themselves of its advantages in the cases presenting extra hazard. For many years a small number of surgeons have offered the method, not only to their badly handicapped patients, but to those not so greatly handicapped as well, and during recent years a comparatively large number of surgeons have availed themselves of its many advantages when performing upper abdominal surgery. The successful use of local anesthesia in this region has become an accomplished fact in the hands of some

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

surgeons. The position taken by surgeons who have not developed the method sufficiently so that they can use it successfully becomes less tenable every day. While we still find many surgeons of large experience stating that local anesthesia cannot be used with satisfaction in surgery of the upper abdomen, the profession is beginning to realize that these gentlemen are making a confession of their own shortcomings in this regard, and that the opinions of those who have mastered the technic and are therefore able to operate with facility when using the local method must be given the respect they deserve.

The lowered risk to the patient, both immediate and remote, is admitted. The argument that lung complications are as frequent and severe following local as they are when general anesthesia is used, based on the view that most lung complications are of embolic origin, is lacking in statistical proof. Again, the reports from those clinics in which a comparatively large amount of surgery is performed under local anesthesia are showing an extremely low percentage of lung complications. Furthermore, the finding of gastric contents in the lungs postmortem shows that a certain percentage of these complications are not of embolic origin. Finally, if we were to admit that all postoperative lung complications are of embolic origin, it is perfectly obvious that the embolic process would produce a more disastrous effect on lung tissues that are embarrassed by the presence of more or less aspirated material, which is always present following general anesthesia. Finsterer's recent report of 407 major gastric resections without a death from pulmonary complications is extremely significant. Furthermore, the statistics that have appeared from time to time showing that local anesthesia has no effect in reducing postoperative lung complications are vitiated to a certain degree because of the fact that, until recently, local anesthesia has been reserved for the desperate risks only.

The local anesthesia method, contrary to general belief, presents also certain definite advantages in relation to the operation per se. The muscular relaxation, the silent field, the absence of engorgement, the aid offered by the patient's cooperation, the opportunity for avoiding trauma, the absence of postoperative vomiting, the avoidance of depletion through lack of fluids, the opportunity to apply the physiologic test and a host of other factors that act in the patient's interests are all to be considered most desirable attributes of the local anesthesia method.

Unfortunately, a large percentage of the profession is unwilling as yet to admit that this method can be used with satisfaction in this region, and it is for this reason that I wish to enumerate some of the factors which I feel are worthy of consideration by those who are desirous of achieving more or less routine success when operating in the upper abdomen by the use of local anesthesia.

One of the most serious objections, at least in the minds of those who use general anesthesia as a routine, is the alleged impossibility of making wide abdominal explorations when using local anesthesia. My position in relation to this point has not changed. In October, 1920, I[1] remarked, before the Minnesota Medical Association:

> Is the routine general abdominal exploration an ideal and universally desirable procedure? How often do we see the upper abdomen explored during the performance of a pelvic laparotomy, and the kidneys, gallbladder and stomach reported normal after a cursory examination with the gloved hand, while the same surgeon, after opening the upper abdomen of the next patient, spends many minutes in examining the gallbladder and stomach, perhaps opening the latter in search of an ulcer, and finally depends upon the pathologist for the settlement of a question so blithely decided in the case of patient number one. While I would not decry the use of the blind abdominal exploration to a limited extent, where it is strictly indicated, I think it is as used today too frequently a subterfuge for an incomplete diagnosis. Pelvic pathology, although it may defy an exact diagnosis, should usually be recognized sufficiently from the history, combined with vaginal and rectal examination, to allow one to decide upon the necessity of an operation being performed. In the vast majority of cases, upper abdominal pathology which can be diagnosed by the gloved hand of the operator will have the classical earmarks recorded in a properly written history, a thorough examination plus properly coordinated laboratory data. The same is true of lesions of the kidney.

I see no reason to change my opinion; and, indeed, my position, taken many years ago, seems to have anticipated the reaction that is now manifest against too frequent and widespread use of the blind abdominal exploration as a means of arriving at a correct diagnosis. Although prominent surgeons have not, as a rule, admitted the futility of the blind exploration as a means of diagnosis until recently, this futility is now being admitted by our leading abdominal surgeons with sufficient frequency to negative to some degree, at least, the argument that one should not use local anesthesia on this account. The physical conditions found within the abdomen taken alone, without reference to the particular patient's symptoms, can seldom be evaluated with accuracy by the surgeon, especially if these conditions are judged exclusively by the findings of the palpating fingers. It is my belief that the application of the physiologic test may be relied on as a more accurate means of obtaining information.

THE PHYSIOLOGIC TEST

The information to be derived from the patient's sensation during operation, when suspected organs or tissues are being manipulated, is not infrequently of considerable aid. By making traction or tortion or by using varying degrees of pressure on the appendix, gallbladder, duodenum, ovary or fallopian tube, it may be possible for us to duplicate almost exactly the pain or sensation of distress which caused the patient to present himself for examination. Per contra, one may at times eliminate an organ that presents a pathologic appearance as the cause of the patient's symptoms by means of this test. Many years of observation leads me to believe that, as a means of diagnosis, the physiologic test carried out on the conscious patient stands as a most worthy competitor of the time-honored abdominal exploration.

EXPOSURE

The long accepted maxim, that one's ability to acquire knowledge through the sense of vision is many times greater than that of all the other senses combined, applies as truly to the acquisition of knowledge pertaining to pathologic conditions within the abdomen as it does to the general acquisition of knowledge. Its obvious advantages in relation to diagnosis is not by any means the only desirable attribute resulting from a proper exposure of the operative field. It presents advantages of a technical nature that amount practically to the difference between working in the light and working in the dark. It permits tissues to be attacked

1. Farr, R. E.: Minnesota Med. 4:209 (April) 1921.

within the minimum of displacement and distortion, which means a minimum of traction and therefore trauma; and it permits a maximum of deliberation and accuracy.

As I consider the obtaining of a proper exposure of the viscera the key to the successful use of local anesthesia in abdominal surgery, the means of obtaining and maintaining this exposure must be considered of prime importance in a discussion of the local anesthesia method. Success depends on a sequence of factors, all of which are interdependent and each one of which is dependent on the successful carrying out of the maneuvers preceding it. These factors are, in the main, a proper mental quiescence on the part of the patient; the painless establishment of perfect anesthesia, thus abolishing the reflexes of the abdominal muscles; elastic continuous retraction; the utilization of the force of gravity to carry movable viscera out of the field; the cooperation of the patient; anterior splanchnic anesthesia, and appropriate surgical strategy.

A thorough discussion of any one of these factors cannot be indulged in now, on account of the lack of time; and yet the importance of each cannot be overestimated. An observance of all the details required to meet the indications amounts to nothing less than what might be designated a system. This system I have chosen to call the "local anesthesia method." A misplay or an overt act committed in relation to any portion of the procedure, or a failure to abide by the fundamentals enumerated above, may, and in fact usually does, forestall a successful issue. Thus, the surgeon who has not given sufficient consideration to the methods of obtaining a proper mental attitude of the patient or has not mastered the technic of painlessly, yet thoroughly anesthetizing the abdominal wall, or one who uses sudden rigid forceful retraction, thereby eliminating the possibility of obtaining a negative intra-abdominal pressure when the abdomen is opened and forfeits that most essential attribute, the utilization of the force of gravity, or who fails to obtain the cooperation of the patient during the important steps of the operation, will be unable to apply anterior splanchnic anesthesia and successfully complete the operation. Furthermore, the surgeon who is unable or unwilling to perfect himself in the application of surgical strategy which is compatible with the use of local anesthesia will find it impossible to carry out operations in the upper abdomen under the use of local anesthesia, even though he adheres to the other portion of the regimen.

Time will not permit a discussion of the details relating to the mental attitude of the patient. Experience shows, however, that with the successful use of the method, combined with the judicious administration of preliminary narcotics and the assistance of a skilled psychanesthetist, psychic incompatibility assumes a minor rôle in the employment of the method.

The method in inducing anesthesia is of extreme importance. In the absence of contraindications, direct infiltration of all layers along or near the line of incision reduces the margin of error to a minimum, does not interfere with wound healing, and, if carried out by the "subdermal" method, is practically painless.

Incisions should be made without making pressure on tender abdominal viscera, and their direction and length should be adequate for the necessary exposure.

Only elastic lateral retraction should be employed. When the abdomen is opened, a negative intra-abdominal pressure must be obtained. Exposure is further facilitated by the employment of the force of gravity to carry movable viscera away from the field. This is accomplished by tilting the operating table by means of the worm drive. In the upper abdomen, the reversed Trendelenburg and the lateral tilts are essential. The stealthy vertical retraction of the abdominal wall and utilization of proper illumination complete the requirements for obtaining the necessary exposure.

The next step, and one which marks a great advance in the use of the method, consists in establishing anterior splanchnic anesthesia, the introduction of which is entirely a matter of proper exposure, which is, as stated, dependent on the successful carrying out of the regimen outlined above. Cholecystostomy, interior and posterior gastro-enterostomy, and the division of visceroparietal and visceravisceral adhesions may, as a rule, be accomplished without intraperitoneal anesthesia, provided proper surgical strategy is employed. This fact allows one the opportunity of releasing adherent organs by means of sharp dissection, and thus finally obtaining an exposure of the splanchnic area for the purpose of introducing anesthesia when this adjunct is required.

SUMMARY

The use of local anesthesia in surgery of the upper abdomen possesses certain definite advantages. By its use the tendency to postoperative lung complications is reduced. The effects of local anesthesia on the general system and vital organs is more benign than that of general anesthesia.

The use of the blind abdominal exploration should be more limited in the future than it has been in the past.

The physiologic test is one of the most important attributes of the local anesthesia method.

The use of local anesthesia comprehends the mastering of a complete system or method, and success can be expected to follow only the mastery of this method. The important features of the method which demand observance are: attention to the psychic condition of the patient; the establishment of careful preoperative diagnosis; the painless, thorough induction of anesthesia of the abdominal wall; elastic retraction; perfect exposure; the establishment of anterior splanchnic anesthesia, when indicated; the enlistment of the patient's cooperation, and the application of a surgical technic that is compatible with this method of anesthesia and the best interests of the patient. Finally, the best interests of future surgery demand that less credence be extended to the opinions of those who, while possessing great experience with the use of general anesthesia, lack experience with local anesthesia, and that greater credence be given to the opinions of those who, through continuous and extensive application of the local anesthesia method, have developed sufficient experience to justify a proper consideration of their opinions.

Institutional Care of Value in Tuberculosis.—The institutional care of the tuberculous sick has proved its worth and has come to stay. It is yearly rescuing thousands of souls from an early grave or adding to their years. Fundamentally, the principles that gave it birth are sound and will withstand any amount of shallow criticism. It has never yet been given a complete test, for the simple reason that no community has as yet seen fit to appropriate enough money to take care of every one of its tuberculosis patients for a proper length of time.—A. K. Krause: Rest and Other Things, p. 77.

THE VALUE OF SACRAL NERVE BLOCK ANESTHESIA IN OBSTETRICS *

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Anesthesia is as justifiable in all obstetric cases as it is in surgical operations. The fundamental requirements of an obstetric anesthesia, however, are widely different from those for gynecologic operations, so that the anesthetics and their administration must likewise vary in order to meet these special requirements. The first consideration should be the general condition of the mother, much the same as of the patient in gynecologic operations. The possible influence of pulmonary, cardiac and renal lesions, as well as the toxemias of pregnancy, may determine the question of safety to the mother. The second consideration must be the influence of the anesthetic on the child, and lastly, the effect on the progress of labor. The employment of a possible local anesthetic in obstetrics should adequately fulfil the first and second of these requirements, and if it does not too greatly retard the progress of labor, its use should prove almost ideal.

Local anesthesia in obstetrics should also be facilitated by the fact that an anesthetic is rarely necessary before the second stage. It is certainly well to delay the use of an anesthetic as long as possible, and many labors may, of course, be easily conducted without an anesthetic. In most cases the demand for anesthesia increases as labor progresses, although a light anesthesia is usually sufficient until the head passes through the vulva. It is at this point that the most extreme anguish is experienced, so that anesthesia must be pushed to a true surgical degree, but stopped as soon as the head is born. Two degrees of anesthesia are thus required: first, obstetric anesthesia, in which pain is dulled, or relieved with only a brief or no loss of consciousness, and second, surgical anesthesia, in which both consciousness and body rigidity are abolished.

But little attention has been paid to the application of a pelvic floor local anesthesia to the field of obstetrics. In fact, most obstetricians regard local anesthesia as of little value in the analgesias of childbirth. Infiltration into the perineal tissues has been practiced with but little benefit. Methods have been devised of blocking the pudic nerve, which, combined with infiltration, offer a wider area of anesthesia, but still insufficient to control the pain of the second stage. The adequacy of the birth passages is estimated by the various diameters of the bony pelvis, soft tissues being entirely disregarded. The most efficient local anesthetic for obstetrics must then be one that will anesthetize the entire pelvic floor included within the pelvic girdle, since the advancing presentation stretches and tears all of these structures.

Complete anesthesia of the pelvic floor may be obtained by block of the secral nerves before the formation of the plexuses. For an understanding of the possible effect of this procedure on the pelvic floor and powers of labor, a consideration of the nerve supply is valuable. The pelvic floor (Fig. 1) is supplied by the second, third, fourth and fifth sacral nerves and anococygeal filaments passing out directly through the sacral hiatus. The first pair of sacral nerves does not take part in the innervation of the pelvic floor proper, except possibly as a contribution to the sensory innervation of the pelvic peritoneum. Sherrington's law regarding the segmental innervation of the skin probably also holds true with regard to the parietal peritoneum. Sacral sympathetic efferent fibers leave the

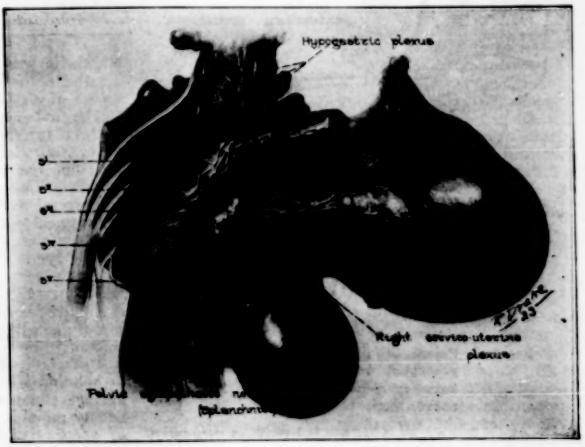

Fig. 1.—Innervation of the pelvic floor and viscera (modified from Frankenhäuser).

spinal cord with the anterior roots of the second, third and fourth sacral nerves. These fibers are collected in the pelvis into the nervi erigentes, or pelvic splanchnic nerves, which proceed to the pelvic sympathetic plexuses, from which fibers are distributed to the pelvic viscera. According to Langley, vasodilators are distributed to the blood vessels of these organs, while inhibitory fibers probably pass to the smooth musculature. Afferent sympathetic fibers also conduct impulses from the pelvic viscera to the second, third and fourth sacral nerves.

The nerve supply of the uterus is derived partly from the cerebrospinal, and partly from the sympathetic. The cerebrospinal is represented mainly by the third and fourth sacral nerves, mainly sensory. A sympathetic plexus is located on each side of the cervix, and is composed of branches from the sacral sympathetics and hypogastric plexuses.

But little is known of the nervous mechanism of a labor contraction. A nerve center is believed to exist in the cortex, one in the medulla, one in the cerebellum, and one in the lumbar enlargement of the cord, because

* From the Section on Anesthesia, Mayo Clinic.
* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

irritation at these points causes uterine contractions. Delivery has been shown to occur in animals when the nerves connecting the uterus to the central nervous system have been severed. The primary stimulus to uterine contractions is, therefore, in the uterus itself, although under normal conditions the contractions of this organ are influenced by reflex effects through its extrinsic nerve supply.

On the basis of anatomic and physiologic grounds, block of all nerves below the second sacral, inclusive, should result in loss of sensation of the structures of the pelvic floor, and abolishment of any spasm of the pelvic floor musculature, resulting in complete relaxation; block of the sympathetics distributing to the

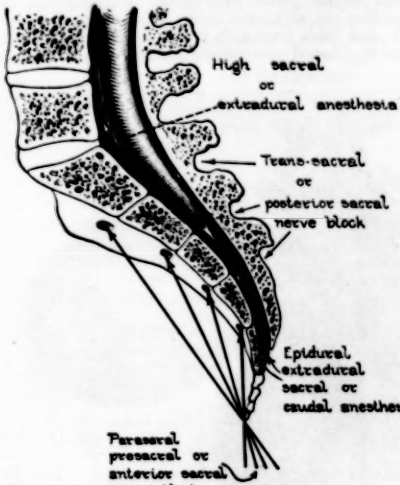

Fig. 2.—The three avenues of approach in block of the sacral nerves.

uterine muscles and vessel walls, by abolishing vasodilator and inhibitory impulses, should result in contraction of the smooth musculature and blood vessels of the uterus. The sacral sympathetics make up but a small part of the sympathetic innervation of the uterus, however, so that the effect of block of the sacral sympathetics alone would be difficult to foretell.

Anesthesia of the pelvic floor (Fig. 2) may be obtained by block of the sacral nerves before the plexuses are formed, at their exits from the sacrum. In surgery, three methods of approach to these nerves are employed. Unfortunately, a confusion of terminology exists with regard to these three procedures. Blocking at the anterior foramina through the perineum is called the parasacral, presacral or anterior sacral method; injection of an anesthetic solution into the sacral canal is termed epidural, sacral, extradural and caudal anesthesia; and by injections into the posterior sacral foramina, transsacral or posterior sacral nerve block is performed. The first of these methods will not be applicable, since the injections must be made through the perineum into the hollow of the sacrum, and the engaged head would constitute an obstruction.

The following observations were made on ninety parturients from the obstetric wards of the Cook County Hospital in Chicago. The comparative merits of the different methods of approach to sacral nerves were studied, and the values of the different formulas for epidural injections were determined. The value of the

Table 1.—*Quality of Anesthesia Resulting from Different Methods*

	Complete Pelvic Floor Anesthesia	Partial Pelvic Floor Anesthesia	Average Duration in Successful Cases		Cases in Which Labor Outlasted Anesthesia	
			Hrs.	Min.	Failure	Cases Rejected
Formula 1; transsacral method	15	1	2	24	..	6	..
Formula 2; transsacral method	17	..	2	2	..	4	4
Formula 3; epidural injection	19	3	1	57	..	6	6
Formula 4; epidural injection	9	3	1	55	..	1	1
Formula 5; epidural injection	12	..	2	10	1	4	4
Formula 6; epidural injection	9	1	2	7	..	1	..

anesthetic was studied from two points: first, as an anesthetic for obstetric operations, and, second, as a means of abolishing the pain of normal labor.

The first method tried was the association of a low epidural injection with transsacral nerve block of the lower four sacral nerves. In making the epidural injection, one places the patient on the left side in a modified Sims position (Fig. 3), after which the lower four sacral nerves are blocked in the same manner as for surgical work. The anesthesia resulting from block of these nerves is shown, as in the illustration, to include the entire pelvic floor and wall of the uterus, since the pain of labor can be entirely controlled by these injections (Fig. 4).

The first series of sixteen patients was anesthetized in this manner, from 60 to 85 c.c. of 1 per cent. procain solution (Formula 1) being used. Ten minims (0.6 cc.) of epinephrin for each hundred cubic centimeters of solution was added in all cases (Table 1). The average duration of anesthesia was two hours and twenty minutes. In an effort to prolong the duration of anesthesia, 0.4 per cent. sodium bicarbonate was added. According to some authorities, the addition of

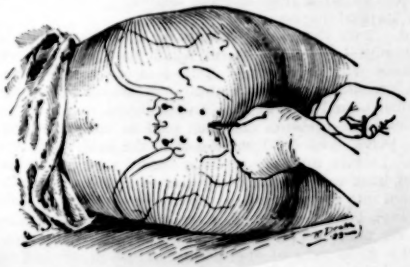

Fig. 3.—Position of parturient for block of the sacral nerves.

the alkali potentiates the anesthetic action. Formula 2, then, differs from Formula 1 only in the addition of sodium bicarbonate. In this series of seventeen cases, the average duration of anesthesia was two hours and two minutes, showing no advantage gained by the addition of sodium bicarbonate.

These two series of cases serve to emphasize the technical difficulty in performance of transsacral block in parturient women. In the average emaciated man who can lie flat on the abdomen, the injection of these foramina is not difficult. Obesity over the sacrum obscures landmarks and increases the distance from skin to sacrum, thus increasing the difficulty of locating the foramina. When the patient lies on her side, anatomic landmarks are distorted. The soft parts by their own weight fall downward, and the hiatus is not then in the middle line. When, in addition to this distortion, the patient twists and squirms during a labor pain, transsacral nerve block becomes a tedious and aggravating procedure both to the patient and to the operator.

Epidural injections were next tried. The third series of patients was given from 40 to 50 c.c. of 1.5 per cent. procain, with a 0.4 per cent. bicarbonate solution (Formula 3). The average duration of anesthesia was one hour and fifty-seven minutes. The fourth series of twelve patients received from 30 to 35 c.c. of a 2 per cent. procain solution with 0.4 per cent. bicarbonate (Formula 4). The average duration of anesthesia was one hour and fifty-five minutes. The fifth series of thirteen patients received from 40 to 50 c.c. of 1.5 per cent. procain without bicarbonate (Formula 5). The sixth series of ten patients was anesthetized with essentially the same formula as Formula 5, but with epinephrin (Formula 6).

From the standpoint of the anesthetic, better results over a slightly longer period of time were obtained by the transsacral method. The addition of the sodium bicarbonate was of no advantage. The difficulties in execution of transsacral block in the parturient make the epidural method the more practical, even though the height of anesthesia is variable.

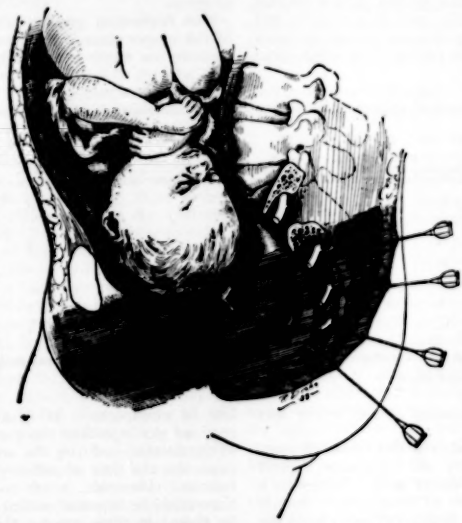

Fig. 4.—Median longitudinal section of the pelvis anterior to the sacrum and oblique longitudinal section through the left sacral foramina. The shaded area represents the extent of anesthesia.

The ninety cases studied were not selected, but taken in succession. Patients not receiving injections were missed, either because they came in too late for an injection, or were delivered in our absence. The total number of patients delivered during this study was 162. Sixty per cent. of the patients were primiparas, a percentage higher than the general average of this institution, which is 45. This increase is due undoubtedly to the fact that the rapid deliveries in multiparas made it difficult to determine when to inject them. Multiparas were also more often admitted to the hospital just in time to be delivered.

Fifty-one per cent. of the patients were colored women, which is about the normal percentage for this hospital. The large number of colored patients naturally increases the frequency of prolonged labor due to contracted pelvis. The average weight of the babies was 7 pounds as compared to 7 pounds and 3 ounces, the average weight of the babies delivered without the injections. The slight difference may be accounted for by the higher percentage of primiparas in the series injected.

OBSTETRIC OPERATIONS

It is obvious that all obstetric operations in which the operative field lies within the area innervated by the sacral nerves can be painlessly performed under sacral nerve block anesthesia. The unmistakable relaxation of the pelvic floor facilitates any operation attempted by way of the genital tract (Table 2). Twenty-one forceps operations were performed, of which ten were low, eight middle, and three high forceps deliveries. In only three instances was any other anesthetic employed. Ether was administered to one patient before the possibilities of block anesthesia were appreciated. In another, ether was necessary because the block anesthesia began to wear off before the forceps delivery was completed. The perineal relaxation not only facilitates the application of the blades, but shortens the duration of the operation and reduces the number of perineal tears. The patient continues to have good uterine contractions, unless operated on immediately after the injections, and the operator not only can apply traction during each contraction of the uterus, but also can induce the patient to cooperate by bringing her abdominal muscles into action. Another argument for the method is the absence of harm to the baby from the anesthetic. In difficult forceps cases the operator is often hurried because of the danger of anesthetizing the child. Many of the operations were performed immediately after the injection, a few at the end of two hours, and one at the end of three hours. In two instances the scanzonian maneuver was performed for persistent occipitoposterior positions. In other instances the head was delivered as a posterior, because the relaxation was such that it was deemed unnecessary to rotate. The three high forceps operations were performed very slowly, one taking an hour, and it was exceedingly satisfactory not to be worried about the possible effects of ether on the baby.

The operation of version and extraction may also be performed, the relaxation of the pelvic floor being advantageous here. A few might question the advisability of this anesthesia in version; but when one bears

in mind that there is usually a temporary cessation of uterine contractions, performance of version is facilitated. In such cases it is necessary to obtain relaxation of the abdominal walls of the parturient, and too much pressure on the abdomen may result in pain.

Repair of perineal tears was painlessly performed in twenty-one cases, and episiotomy and repair in six. The method has also been used in incomplete abortions, uterine packs, and in the giving of an intra-uterine douche in patients not included in this list. Decapitation was performed once.

It was hoped in the beginning that, in cases of rigid cervix, this anesthesia might relax the cervix also. Further studies should be conducted on this point before a definite statement can be made. In one case because of a delay during the first stage of labor, evidently caused by a rigid cervix, and because of the poor general condition of the patient, it was decided to dilate the cervix manually and do a version and extraction. The evidence in this case seemed to speak for a partial relaxation of the cervix. The intense pain

agement of the obstetrician, or his aids, be maintained at this juncture.

The effect on uterine contractions was inconstant. In the majority of cases there was nearly complete cessation of contractions within ten minutes after the injection was completed. This diminution rarely lasted more than twenty minutes, after which the contractions gradually increased in frequency and duration until, after a short time, they proceeded normally. Unless the abdomen was palpated, however, one would not know whether the contractions were continuing or not. Because of the comparatively sudden transition from a condition of extreme anguish to one of ease, there was a tendency to rest or doze in comfort. Feeling no pain, it was difficult for the patients to appreciate the fact that they were in labor, and to realize the necessity of voluntary bearing down in order that labor might progress.

The feature of greatest difficulty was the selection of the proper time to induce anesthesia. There was a tendency to apply it too early in primiparas and too

TABLE 2.—*Presentation, Position and Operative Procedures* *

								Operative Delivery								
								Forceps								
	Primiparas	Multiparas	Occipito-anterior	Persistent Occipito-posterior	Breech	Face	Transverse	Low	Middle	High	Decapitation	Version	Insertion of Bag	Manual Dilation of Cervix	Episiotomy	Lacerations
Formula 1; transsacral method..	10	6	14	1	1	..	..	2	..	..	..	..	..	..	2	5
Formula 2; transsacral method..	16	7	18	4	..	..	..	..	5	..	..	..	..	1	1	5
Formula 3; epidural injection..	13	9	15	3	3	1	1	2	3	..	1	2	..	..	2	4
Formula 4; epidural injection..	6	6	10	1	..	1	..	1	..	1	..	..	..	..	1	2
Formula 5; epidural injection..	6	7	11	2	..	..	..	3	2	..	..	..	..	..	..	3
Formula 6; epidural injection..	9	1	7†	2	2†	..	..	2	..	2	..	1	1	2	..	2
Total.....	54	36	70	13	6	2	1	10	8	3	1	3	1	3	6	21

* Under lacerations are included tears requiring stitches. Episiotomy was not performed unless it was apparent that severe gross perineal injury was inevitable.
† Twin birth, occipito-anterior and breech.

usually associated with dilatation of the cervix was entirely absent.

Normal Delivery.—The value of this means of anesthesia in spontaneous delivery will, of course, depend on its influence on the progress of labor. Whenever a method of relieving the pains of labor greatly retards or stops the progress of birth, its use should be employed with caution. This drawback will obtain to a certain degree with all methods of anesthesia, because there is usually a direct relation between the amount of pain and the rapidity of progress. The parturient bears down the harder as the pains increase in intensity, finally causing the act of bearing down to become entirely involuntary. The pains, therefore, serve as the regulating mechanism for the necessary increase in the intensity of expulsive powers. If this influence is not experienced during the course of labor, it must be compensated for by other means. This fact was not realized in our earlier work, and several of the patients were left to their own resources and allowed to procrastinate until anesthesia had subsided. Much better progress was noted after we began instructing the patient how to bear down, and urging her to greater voluntary effort during the uterine contractions. In the absence of proper instruction and encouragement, the parturient is likely to rest and delay the progress of birth until the pains are again felt. It is thus paramount that the continual attendance and encour-

late in multiparas. At first a considerable number received the injections too early to obtain the benefits of the anesthesia during the actual expulsion. In many cases also the time of delivery could not be accurately foretold. However, it was soon found that the injections could be repeated so that a second injection could be given; in three cases a third injection was given. The injections should not be repeated needlessly. Ability to judge the proper time for injection is absolutely necessary, if the best results are to be obtained; hence the necessity of having the patient under close surveillance and of having correct knowledge of position, dilatation, station and progress. The duration of anesthesia in our cases averaged approximately two hours. If it could be determined with certainty that labor would terminate within an hour, sacral nerve block anesthesia would be much more easy to employ.

As a result of our experiences, it was decided that the maximum benefit from the injections, in average cases, was obtained when dilatation of the os had reached at least 7 cm. in primiparas and 4 cm. in multiparas.

When, as a result of the patient's cooperation, labor terminated during the period of anesthesia, it was without the usual noisy outcry, and often the patient was surprised that the baby had been born. Others felt dull pressure as the head slipped over the perineum. The perineum slides back from the head in most cases

with such ease that the obstetrician is surprised, because a tear seems inevitable. The fact that the parturient does not lose consciousness enables her to appreciate the progress of labor step by step. Under these conditions the opinion of the patient is of great value, and it is within the power of the obstetrician and others to impress her with the advantages of the procedure. Most patients who had experienced previous labors without anesthesia expressed profund appreciation of the freedom from pain by the present method.

Following delivery, no tendency toward atonicity of the uterus was noted. The placenta separated normally, and there was no tendency toward hemorrhage, as far as could be estimated grossly. Involution of the uterus occurred normally, and there were no postpartum hemorrhages, or alarming hemorrhages following expulsion of the placenta.

COMMENT

While the period of most extreme anguish in spontaneous delivery may be controlled by present methods of block anesthesia, the field of usefulness will greatly increase when a means has been devised to prolong the action of an epidural injection. Of the many methods devised to potentiate local anesthetic solutions, the addition of sodium bicarbonate has been given widest publicity, but this method in our hands was of no value. Other chemicals have been used, as calcium chlorid and potassium sulphate. Clinical experience, however, indicates that the potentiation attributed to these drugs is greatly overestimated. Allen suggests the addition of 5 per cent. gelation to the solution, in order to delay absorption from the site of injection and prolong the action. This method would seem to possess advantages, and should be given a thorough trial in obstetrics. Of all local anesthetic substances, the duration of anesthesia is longest with quinin and urea hydrochlorid solutions. Anesthesia may last from several hours to five or six days in infiltration anesthesia. The injection of a solution stronger than 0.25 per cent. produces marked induration of the tissues, which may end in sloughing. The induration is due principally to fibrinous exudate, indicating a local irritant action on the tissues. For this reason, its use has been largely abandoned in infiltration anesthesia, and it was never popular for nerve block methods. No record of its use in epidural injections is available; but, because of the local disturbance within the sacral canal that a solution of sufficient strength to block sacral nerves might produce, its use here is not to be recommended. A small amount of this drug, from 0.1 to 0.2 per cent., is still occasionally added to other local anesthetic solutions, for the purpose of prolonging the anesthesia. This strength might prove harmless in the sacral canal when added to the usual procain formula.

Further investigation is necessary on the whole subject of epidural injections as applied to obstetrics. It is possible that the drugs are already at hand which, by proper combination and use, will produce a perfectly safe local anesthesia of the entire pelvic floor and viscera for from five to six hours without repetition. Such a procedure should find immediate widespread use in obstetrics, and prove to be the anesthetic of choice in normal delivery.

CONCLUSIONS

1. The pains of labor may be entirely controlled by block of the second, third, fourth and fifth sacral and the anococcygeal nerves.

2. Block of these nerves by the transsacral method, plus a low epidural injection, gives satisfactory anesthesia, but the epidural method alone is the more practical. The relaxation of the pelvic floor produced by these methods is a distinct advantage.

3. Most operative and manipulative obstetric procedures may be painlessly performed under sacral nerve block anesthesia.

4. In normal delivery, the abolition of the pain reflex also takes away the voluntary effort of bearing down, which loss must be compensated for by other means.

5. The feature of greatest difficulty is the selection of the proper time to induce anesthesia. In our series, the maximum benefit was obtained by induction when dilatation of the os had reached at least 7 cm. in primiparas and at least 4 cm. in multiparas.

6. The field of usefulness of this means of anesthesia in normal delivery will greatly increase when a means has been devised to prolong the anesthetic action of an epidural injection for at least six or seven hours. Such an anesthesia should find widespread use, and might become the anesthetic of choice in normal delivery.

SCOPOLAMIN-MORPHIN SEMINARCOSIS

REPORT OF ITS USE IN THE THIRD THOUSAND DELIVERIES IN BARNES HOSPITAL *

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AND
O. S. KREBS, M.D.
ST. LOUIS

In 1906, the original publication by Gauss appeared, and he reported his series of 500 cases. In studying these he had encountered and carefully recorded most of the difficulties and most of the objectionable features about which many who took up this method of relieving the pain of child-bearing complained, and he had overcome and avoided these difficulties and by-effects in his later series of cases. This is particularly true of the administration of morphin, which Gauss held responsible for the delayed respiration in some "twilight babies," and which he restricts to one-sixth grain (0.0108 gm.) to be given once, and once only, with the initial dose of scopolamin.

In 1915, the investigation and employment of Gauss' method was taken up by Dr. Henry Schwarz, then chief of the obstetric department of the Washington University Medical School. Animal experimentation was carried on in the pharmacologic laboratories by Dr. Otto H. Schwarz under the supervision of Dr. Dennis E. Jackson, then professor of pharmacology, to determine the effects of the various opium alkaloids and scopolamin on heart and respiration, before employing the drugs in a routine clinical way.

The experiments proved to the satisfaction of the investigators that scopolamin in doses much larger than were ever recommended for "twilight sleep" has no material effect on blood pressure or on respiration. The paralyzing action of scopolamin on the peripheral nerve endings was illustrated by its action on the endings of the vagi in the bronchioles, its action on their inhibitory terminals in the heart, and its action on the

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terminals of the third nerve in the iris. Experiments on spinal dogs with morphin, narcotin and morphin-narcotin meconate [1] showed that their alkaloids act directly on the muscle fibers of the bronchioles, causing bronchoconstriction. This action was most pronounced in morphin, less so in narcotin, and least in morphin-narcotin meconate. The interference of these opium alkaloids with the respirations of the new-born child is, therefore, twofold. In the first place, the respiratory center is depressed so that it requires a greater degree of stimulation to be set in motion; in the second place, there is bronchoconstriction.

Opitz,[2] in 1922, published the most recent report from the Freiburg clinic. He stated that among 4,279 births, 2,242 of which were effected under "twilight sleep," only 2.1 per cent. of the children born in "twilight sleep" died during the first nine days, while the mortality among children delivered without the use of "twilight sleep" reached 3.75 per cent. He said that the danger in "twilight sleep" depended on the amount of morphin used. He felt that if "twilight sleep" causes any injuries to mother or infant, these are due exclusively to the method employed and to improper drugs. Good results can be obtained only by operators who have a perfect command of the technic, which requires careful study.

TABLE 1.—*Types of Anesthetic; Infant Mortality*

Anesthetic	Number	Still-Born	Died	Total Dead	
				Number	Per Cent.
Scopolamin-morphin	395	15	3	18	4.56
Chloroform	377	11	6	17	4.51
Nitrous oxid	69	4	0	4	5.80
Ether	54	7	2	9	16.66
Miscellaneous	4	0	0	0	0.00
None	103	7	1	8	7.76
Total	1,000	44	12	56	5.60

In our first series of cases we used scopolamin stable "Roche" and morphin-narcotin meconate; later scopolamin (hyoscin) hydrobromid in ampule form as prepared by Burroughs Wellcome & Co., was substituted. We have also used the tablet form of scopolamin put up by Sharpe & Dohme, with very satisfactory results. Quite early in the use of the method we substituted morphin for morphin-narcotin meconate. The advantage of the latter over morphin is not as great as it might appear. While morphin undoubtedly has the more harmful influence on fetal respiration, morphin-narcotin meconate is administered in doses three times larger, and thus the advantage is in great measure lost. We use morphin-narcotin meconate in one-half grain (0.0324 gm.) doses, or morphin in one-sixth grain (0.0108 gm.) doses.

We use scopolamin-morphin seminarcosis as a first stage measure. When the uterine contractions are strong and occur at regular intervals, and usually when there is at least two fingers' dilatation in the primiparous patient, seminarcosis is begun. In the multiparas the procedure is usually begun with the first regular contractions that are painful.

The patient is always prepared for delivery before seminarcosis is begun and, after the usual preparation, is sent to one of the delivery rooms. Her ears are stuffed with cotton moistened with oil, and her eyes are covered with gauze held in place by adhesive strips.

1. Morphin-narcotin meconate (a double salt) contains: morphin, 29.4 per cent.; narcotin, 42.6 per cent.; meconic acid, 20.6 per cent., and water of hydration, 7.4 per cent.
2. Opitz, Erich: München. med. Wchnschr. ●●: 261 (Feb. 24) 1922.

The initial dose of scopolamin is $\frac{1}{133}$ grain, or 1.5 c.c. of the scopolamin stable-Roche. The scopolamin hydrobromid contains $\frac{1}{133}$ grain to the cubic centimeter, and we use it in the same dosage: $\frac{1}{133}$ grain for the average woman. With the first injection, separately or combined, is given one-half grain of morphin-narcotin meconate, or one-sixth grain of morphin sulphate. These injections are given subcutaneously. This point is very important, as it is not desirable to get the scopolamin to act quickly; on the contrary, one wishes it to take possession of the patient very slowly. The first injection usually causes dryness of the mouth and throat, and a flushed condition of the face. The patient is encouraged to drink water freely at this stage.

The second injection is given usually forty-five minutes after the first one. This injection is usually as large as the first injection—the morphin-narcotin meconate or morphin is never repeated after the first injection. We test the degree to which the patients are under the influence of the drug by a very simple yet accurate method. Before the second injection and before each contemplated subsequent injection, the patient is requested to put the index finger to the tip of the nose, the eyes being covered. If she succeeds in doing this promptly, she still retains locomotor coordination and the contemplated injection is given; however, if she moves her finger around vaguely and misses the mark, she has lost locomotor coordination and the injection is omitted, or the dose is reduced, for the patient has the desired amount of the drug. In most cases this stage is reached shortly after the third injection, but in not a small number before the time of the third injection.

The third injection is usually given forty-five minutes after the second one. If the patient at this time shows signs of going under the influence of the drug, such as drowsiness or sleeping between pains, but still manifests locomotor coordination, the third injection is reduced to $\frac{1}{200}$ grain or less for the average woman. If no such signs are present, the original full dose of $\frac{1}{133}$ grain is given.

After the third injection, most patients remain sufficiently scopolaminized for two hours or longer. At the expiration of this period, full cervical dilatation has taken place in most cases and further injections are unnecessary and are to be avoided. The first stage of labor is over, or nearly so, and the time is close at hand at which the seminarcosis should be deepened to complete anesthesia by one of the general anesthetics.

There are, however, numerous cases in which the first stage of labor is protracted for many hours, and even for a day or two. This condition is especially true in some primiparous women in whom the membranes have ruptured before the onset of labor, and some multiparous women in whom thorough repair of cervical lacerations, together with fixation of the uterus forward by some abdominal operation, has been performed. Some of these women suffer intensely and for many hours during the first stage of labor, until dilatation is at last complete and final delivery is possible. It is in these cases that the scopolamin method has proved itself so valuable; it is in these cases, likewise, that the administration of the drug must be watched most carefully. The amount of scopolamin given and the time of the injections depend entirely on the degree to which the patient appears to be under the influence of the drug. The administration of the

drug should be continued until the patient has lost locomotor coordination; when this stage is reached, it should be maintained by small and infrequent doses.

The loss of locomotor coordination marks the one boundary of seminarcosis. The patient must cross this boundary, which is "just enough," and she must be kept from crossing the other boundary, which is "too much." This other boundary is reached when, during a labor pain, the patient's pupils no longer show the usual dilatation at the height of the contraction, because they are already dilated to the maximum by the action of the repair work has been done on the cervix, or when the first stage is protracted and painful, owing to premature rupture of the membranes. In cases of delivery through the natural passages in women, who, on a previous occasion, have been delivered by abdominal cesarean section, it is of the greatest importance to prevent all straining on the part of the parturient woman and to extract the child as soon as dilatation is complete, so as to keep strain as far as possible from the uterine scar. It also finds a field of usefulness in cases of eclampsia when the patient is having convul-

TABLE 2.—*Distribution of Cases and Fetal Mortality of Infants Weighing 2,500 Gm. or More*

Class	Scopolamin Seminarcosis	Number	Still-Born		Macerated		Died		Immediate Mortality		Total Deaths	
			Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
White primiparas	Yes	312	2	0.6	0	0.0	6	1.8	2	0.6	8	2.5
Black primiparas	Yes	23	2	8.7	1	4.3	0	0.0	3	13.04	3	13.04
White multiparas	Yes	172	1	0.5	0	0.0	0	0.0	1	0.5	1	0.5
Black multiparas	Yes	12	0	0.0	1	8.3	0	0.0	1	8.3	1	8.3
Total	Yes	519	5	0.96	2	0.38	6	1.15	7	1.34	13	2.5
White primiparas	No	57	2	3.5	0	0.0	0	0.0	2	3.5	2	3.5
Black primiparas	No	19	0	0.0	1	5.2	0	0.0	1	5.2	1	5.2
White multiparas	No	279	1	0.35	2	0.71	1	0.35	3	1.07	4	1.43
Black multiparas	No	28	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	No	383	3	0.78	3	0.78	1	0.26	6	1.56	7	1.82
White primiparas	Atypical	28	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Black primiparas	Atypical	2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
White multiparas	Atypical	35	0	0.0	0	0.0	1	2.8	0	0.0	1	2.8
Black multiparas	Atypical	3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	Atypical	68	0	0.0	0	0.0	1	1.4	0	0.0	1	1.4
Grand total	All types	970	8	0.82	5	0.51	8	0.82	13	1.34	21	2.16

scopolamin on the terminals of the third nerve in the iris. These are the two boundaries which we watch by frequent tests during the administration of scopolamin for seminarcosis. We test for the presence or absence of locomotor coordination until we know that the patient has crossed the first boundary, and we test the pupils from time to time during a contraction to assure us they are still capable of dilatation, and that the patient has not crossed the second boundary. Keeping the patient on this narrow strip constitutes scientific seminarcosis.

When the seminarcosis is intensified to general anesthesia by a general anesthetic at the time of delivery, great care must be exercised that not too much anesthetic is given. Several cubic centimeters of chloroform, given by the drop method, on a thin gauze mask are usually sufficient to render the patient completely relaxed. There is an inclination toward giving too much chloroform, and by so doing the mother is not only chloroformed to a much deeper degree than the occasion demands, but the fetus is also chloroformed so deeply that it is bound to be born apneic, to become asphyxiated, and to require resuscitation.

Scopolamin seminarcosis is most applicable during the first stage of labor, particularly in the primiparous patient, or in the multiparous patient in whom previous sions, when the patient is in active labor, and when forced delivery is not indicated. In these cases it seems to aid in combating successfully the convulsions, and renders the patient less sensitive to external stimuli which frequently excite convulsions. In cases of pulmonary tuberculosis and in cardiac disease, seminarcosis is also successfully used.

The contraindications to the use of scopolamin-morphin seminarcosis are more imaginary than real; however, we feel that it should be used with hesitancy in premature deliveries because of the incompletely developed respiratory apparatus and the lessened irritability of its regulating center. In cases of primary uterine inertia, it probably is contraindicated because the drugs frequently stop the contractions entirely. In cases of eclampsia, placenta praevia, and heart disease complicating pregnancy, it must be used with great care because the patient is a poor risk, the prognosis for the fetus is bad, and, whatever the outcome may be, the cause of it is sure to be laid to the seminarcosis.

In the first thousand deliveries in Barnes Hospital [3] there were 393 deliveries in which scopolamin-morphin was used. The mortality was based on all viable children of twenty-eight weeks gestation or above. Table

TABLE 3.—*Mortality in Private Pavilion Cases—2,500 Gm. and Over*

Type	Number	Still-Born		Macerated		Died		Immediate Mortality		Total Deaths	
		Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Seminarcosis	275	1	0.36	0	0.0	1	0.36	1	0.36	2	0.72
No seminarcosis	97	0	0.0	1	1.03	0	0.0	1	1.03	1	1.03
Atypical	34	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	406	1	0.24	1	0.24	1	0.24	2	0.49	3	0.73

3. Schwarz, Henry: Am. J. Obst. 79:46 (Jan.) 1919.

1 gives the types of anesthetic employed and the infant mortality in each group.

The fifteen stillbirths included one case of hydrocephalus, one case of anencephalus with spina bifida, one 11-pound brow presentation with meningocele, one craniotomy of the dead child in the narrow pelvis, one child with congenital syphilis, and five cases brought to the hospital after protracted labor, in two of which the fetal heart beat could no longer be heard, and all of which required difficult instrumental delivery (on there was no necropsy. Of the two macerated infants, there was cancer of the cervix uteri and pyelitis in the mother in one case, and a prolapsed cord with maceration and general vascular congestion in the other instance. In the cases in which the infants died before leaving the hospital, there was one death following operation for congenital atresia of the pharynx, with opening of the esophagus into the bifurcation of the trachea; two cases of spina bifida with congenital anomalies of the lower extremities; one death by chok-

TABLE 4.—*Infant Mortality in Third Thousand Deliveries in Entire Service*

Class	Number	Seminarcosis	Still-Born		Macerated		Died		Immediate Mortality		Total Deaths	
			Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
White primiparas	348	With and without	6	1.7	0	0.0	4	1.1	6	1.7	10	2.8
Black primiparas	69	With and without	6	8.6	0	0.0	1	1.4	6	8.6	7	10.1
White multiparas	508	With and without	5	0.98	2	0.39	6	1.1	7	1.3	13	2.5
Black multiparas	75	With and without	4	5.3	3	4.0	1	1.3	7	9.3	8	10.6
Total	1,000	With and without	21	2.1	5	0.5	12	1.2	26	2.6	38	3.8
White primiparas	293	With	4	1.3	0	0.0	4	1.3	4	1.3	8	2.7
Black primiparas	46	With	4	8.6	0	0.0	0	0.0	4	8.6	4	8.6
White multiparas	251	With	4	1.6	0	0.0	2	0.8	4	1.6	6	2.4
Black multiparas	26	With	2	7.6	0	0.0	1	3.8	2	7.6	3	11.5
Total	616	With	14	2.2	0	0.0	7	1.1	14	2.2	21	3.4
White primiparas	55	Without	2	3.6	0	0.0	0	0.0	2	3.6	2	3.6
Black primiparas	22	Without	2	9.09	0	0.0	1	4.5	2	9.09	3	13.6
White multiparas	258	Without	1	0.38	2	0.77	4	1.5	3	1.1	7	2.7
Black multiparas	49	Without	2	4.08	3	6.1	0	0.0	5	10.2	5	10.2
Total	384	Without	7	1.8	5	1.3	5	1.3	12	3.1	17	4.4

account of the mechanical disproportion between the pelvis and the fetal head).

In the second thousand cases,[4] there were 519 cases in which the seminarcosis was used. Table 2 shows the distribution of the cases and the fetal mortality based on all infants weighing 2,500 gm. or over.

Table 3 shows the mortality in private pavilion cases, based on infants weighing 2,500 gm. or over, in the series of the second thousand cases.

Among the scopolamin-morphin cases in which there were stillbirths, we found the following to explain the ing while the infant was nursing, and one case of probable birth injury following prolonged effort at induction of labor, followed by difficult forceps delivery.

The infant mortality in the third thousand deliveries, with and without scopolamin-morphin seminarcosis, is presented in Tables 4, 5 and 6; only cases in which the infant weighed 2,500 gm. or more are included.

In addition to the mortality reports for the individual series of 1,000 cases each, we have completed the mortality statistics in the second and third thousand deliveries combined, because both of these series have

TABLE 5.—*Infant Mortality in Third Thousand Deliveries in the Wards*

Class	Number	Seminarcosis	Still-Born		Macerated		Died		Immediate Mortality		Total Deaths	
			Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
White primiparas	139	With and without	2	1.4	0	0.0	1	0.7	2	1.4	3	2.1
Black primiparas	69	With and without	6	8.6	0	0.0	1	1.4	6	8.5	7	10.1
White multiparas	266	With and without	2	0.75	2	0.75	2	0.75	4	1.5	6	2.2
Black multiparas	75	With and without	4	5.3	3	4.0	1	1.3	7	9.3	8	10.6
Total	549	With and without	14	2.5	5	0.9	5	0.9	19	3.4	24	4.3
White primiparas	114	With	1	0.8	0	0.0	1	0.8	1	0.8	2	1.7
Black primiparas	47	With	4	8.5	0	0.0	0	0.0	4	8.5	4	8.5
White multiparas	94	With	1	1.06	0	0.0	0	0.0	1	1.06	1	1.06
Black multiparas	26	With	2	7.6	0	0.0	1	3.8	2	7.6	3	11.5
Total	281	With	8	2.8	0	0.0	2	0.7	8	2.8	10	3.5
White primiparas	25	Without	1	4.0	0	0.0	0	0.0	1	4.0	1	4.0
Black primiparas	22	Without	2	9.09	0	0.0	1	4.5	2	9.09	3	13.6
White multiparas	172	Without	1	0.58	2	1.1	2	1.1	3	1.7	5	2.9
Black multiparas	49	Without	2	4.08	3	6.1	0	0.0	5	10.2	5	10.2
Total	268	Without	6	2.2	5	1.8	3	1.1	11	4.1	14	5.2

cause of death: one case of toxemia in the mother, child born with coils of cord tightly drawn about the neck; one brow presentation with intracranial birth injury; one case of prolapsed cord with traumatic injury to brain at delivery; one face presentation; in one stillbirth the cause of death was undetermined—

4. Krebs, O. S., and Wilson, L. R.: J. Missouri M. A. **20**: 12 (Jan.) 1923.

been figured on the basis of infants weighing 2,500 gm. or more. Table 7 shows that mortality study.

Some of the opponents of scopolamin-morphin seminarcosis feel that it prolongs labor unduly. We do not feel that, using it as we do, in labor managed as we manage it, it has any appreciable effect in lengthening the stages of labor. The apparent lengthening described in detail in the preceding report from this

clinic is chiefly due to the fact that it is in the labor of longer duration that the method is particularly applicable. Others feel that it requires more instrumental deliveries than in cases in which the seminarcosis is not employed. We do not feel that there is any particular end to be gained in permitting spontaneous delivery. In fact, when there is complete cervical dilatation, when the head is completely rotated, and when there is considerable crowning so that an area of scalp about 4 cm. in diameter is visible at the vulval ring, we believe in making episiotomy incisions and applying the forceps and lifting the head over the perineum. This perineal forceps application is in no sense of the word a forceps operation, requires practically no traction, and permits the patient to be delivered under complete anesthesia and under surgical conditions in which there is no struggling of the patient and contamination of the sterile field.

In the series of the second thousand cases, perineal and low forceps were applied in 77.3 per cent. of the white primiparas, and in 45.4 per cent. of the black primiparas, which is in accord with our teaching. In order to meet the criticism that under scopolamin-morphin seminarcosis more forceps deliveries are necessary, we observed a series of consecutive primiparas, thirty-four in number. During this period of time there were two or three patients delivered instrumentally for definite indications on the part of the mother or child, but such cases will be found in any series regardless of the anesthesia or analgesia employed.

Table 8 gives a review of this series of spontaneous deliveries under scopolamin-morphin seminarcosis.

Table 9 shows a comparison of the stages of labor of the scopolamin cases in the second thousand deliveries with the recent series of spontaneous deliveries. In the cases represented in the first half of the chart, no particular effort was made to allow the patients to deliver spontaneously, or, in other words, quite a large percentage of these labors were terminated with forceps, which is in line with our teaching.

TABLE 6.—*Infant Mortality in Third Thousand Deliveries in Private Service*

Class	Number	Seminarcosis	Still-Born		Macerated		Died		Immediate Mortality		Total Deaths	
			Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
White primiparas	209	With and without	4	1.9	0	0.0	3	1.4	4	1.9	7	3.3
White multiparas	242	With and without	3	1.2	0	0.0	4	1.6	3	1.2	7	2.8
Total	451	With and without	7	1.5	0	0.0	7	1.5	7	1.5	14	3.1
White primiparas	179	With	3	1.6	0	0.0	3	1.6	3	1.6	6	3.3
White multiparas	156	With	3	1.9	0	0.0	2	1.2	3	1.9	5	3.2
Total	335	With	6	1.7	0	0.0	5	1.4	6	1.7	11	3.2
White primiparas	30	Without	1	3.3	0	0.0	0	0.0	1	3.3	1	3.3
White multiparas	86	Without	0	0.0	0	0.0	2	2.3	0	0.0	2	2.3
Total	116	Without	1	0.85	0	0.0	2	1.7	1	0.86	3	2.5

We see that in the white primiparas the average lengths of the first stage of labor varied slightly more than one hour, the shorter time being on the side of the spontaneous cases. No definite deductions can be made from this figure, however, because the series are so vastly different in point of number. In the first series one would expect a longer first stage because it included the abnormal cases that were eventually terminated by forceps, which cases the second series excluded. There is a wide difference in the lengths of the first stages of labor in the black primiparas, but this difference is explained, too, by the fact that the first series included the cases that were of necessity delivered instrumentally.

A comparison of the second stages of labor shows the figures approach one another very closely. With the first series, including the hard labors in which instrumental deliveries were indicated, one might expect a longer second stage average as compared with the spontaneous cases, were it not for the fact that forceps

TABLE 7.—*Mortality in Second and Third Thousand Deliveries Combined*

Service	Class	Number	Seminarcosis	Still-Born	Macerated	Died	Total Deaths	
							Number	Per Cent.
Entire	White primiparas	745	With and without	10	0	10	20	2.6
Entire	Black primiparas	113	With and without	8	2	1	11	9.7
Entire	White multiparas	994	With and without	7	4	8	19	1.9
Entire	Black multiparas	118	With and without	4	1	9	9	7.6
Total		1,970	With and without	29	10	30	59	2.9
Entire	White primiparas	605	With	6	0	10	16	2.6
Entire	Black primiparas	69	With	6	1	0	7	10.1
Entire	White multiparas	422	With	5	0	2	7	1.6
Entire	Black multiparas	38	With	2	1	1	4	10.5
Total		1,134	With	19	2	13	74	2.9
Entire	White primiparas	140	Without	4	0	0	4	2.8
Entire	Black primiparas	43	Without	2	1	1	4	9.3
Entire	White multiparas	572	Without	2	4	6	12	2.09
Entire	Black multiparas	81	Without	2	3	0	5	6.1
Total		836	Without	10	8	7	25	2.9
Pavilion	White primiparas, white multiparas	857*	With and without	8	1	8	17	1.9
Pavilion	White primiparas, white multiparas	610	With	7	0	6	13	2.1
Pavilion	White primiparas, white multiparas	213	Without	1	1	2	4	1.8

* Thirty-four atypical cases included in total.

frequently terminated the labor and slightly decreased that period of labor.

CLINICAL AND PATHOLOGIC FINDINGS IN CASES OF FETAL DEATH

Scopolamin-Morphin

Still-Born:

Case 1.—Weight, 3,450 gm. Frank breech. Labor, twenty hours; difficult extraction. No necropsy.

Case 2.—Weight, 2,880 gm. Pelvis normal. S. L. A. Prolapsed cord. Difficult extraction. No necropsy.

Case 3.—Weight, 3,120 gm. Pelvis, normal; spines prominent. L. O. P. Labor, twenty hours. Fetal heart became poor in rate and character. No necropsy.

Table 8.—*Spontaneous Deliveries Under Scopolamin-Morphin Seminarcosis*

	White	Black
Color		
Number	26	8
Average age	20.5 yrs.	18.6 yrs.
Position:		
L. O. A.	15	..
L. O. P.	2	..
R. O. A.	1	1
R. O. P.	6	7
L. S. A.	1	..
Pelvis:		
Normal	24	3
Funnel	1	..
Simple flat	..	1
Generally contracted	1	3
Flat, rachitic	..	1
Average gestation	39.3 weeks	39.1 weeks
Perineum:		
Right episiotomy	12	4
Left episiotomy	1	..
Double episiotomy	2	..
First degree tear	7	2
Second degree tear	2	..
No injury	2	2
Labor:		
First stage	13.48 hrs.	10.21 hrs.
Second stage	1.72	2.31
Third stage	0.32	0.19
Anesthetic:		
Nitrous oxid	9	1
Chloroform	16	6
Ether	0	1
No anesthesia	1	..
Child:		
Spontaneous respiration	21	5
Asphyxiated	5	3
Average weight	3,302 gm.	3,115 gm.
Mortality	0	0
Pituitary:		
Number of cases	6	3
Time	Expulsion	Expulsion
Amount	3 min.	3 min.
Twilight:		
Average duration	7.65 hrs.	7.44 hrs.
Began at 3 finger-breadths dilatation		

Table 9.—*Stages of Labor*

Class	Number	First Stage	Second Stage	Third Stage	Total Labor Average
W 1	349	14 hrs., 37 min.	2 hours	18 minutes	16 hrs., 33 min.
B 1	25	20 hrs., 15 min.	3 hrs., 9 min.	21 minutes	21 hrs., 15 min.
W 1	26	15 hrs., 29 min.	1 hr., 43 min.	19 minutes	15 hrs., 31 min.
B 1	8	10 hrs., 13 min.	2 hrs., 19 min.	12 minutes	12 hrs., 44 min.

Case 4.—Weight, 3,480 gm. Labor, fifty hours. R. O. P. Midforceps. Necropsy: defect in left parietal bone.

Case 5.—Weight, 3,360 gm. Placenta praevia centralis. No necropsy.

Case 6.—Weight, 3,820 gm. Labor, twenty-six and a half hours. S. L. A. Pelvis generally contracted. Difficult extraction. No necropsy.

Case 7.—Weight, 3,430 gm. Pelvis, normal. Labor, ten hours. O. L. A. Toxemia: intrapartum rupture of uterus. No necropsy.

Case 8.—Weight, 3,050 gm. Pelvis, normal. Labor, seven hours. O. L. A. Spontaneous. No necropsy. Probably concealed prolapsed cord.

Case 9.—Weight, 3,100 gm. Pregnancy with myoma. Labor, fifty-six hours. Version and extraction. Fetal heart beat, 210. Necropsy: patent foramen ovale; caput succedaneum.

Case 10.—Weight, 3,050 gm. Labor, sixty-eight hours. R. O. P. Difficult rotation. Necropsy: atelactasis, caput, excoriations about head and face.

Case 11.—Weight, 3,450 gm. Labor, seventy-seven hours. R. O. P. Low forceps. Fetal heart irregular and slow. No necropsy.

Case 12.—Weight, 2,820 gm. S. L. A.; footling. Breech extraction. Cervix clamped around neck. Necropsy: stillborn, full-term infant.

Case 13.—Weight, 3,650 gm. Pelvis generally contracted, rachitic. Labor, twenty-eight hours. High forceps. Necropsy: birth hemorrhage over cortex of cerebrum and into posterior fossa in region of cervical cord.

Case 14.—Weight, 2,600 gm. Pregnancy with syphilis. Pelvis, simple flat. O. L. A. Labor, eighteen hours. Necropsy: premature; congenital syphilis.

Macerated:

None.

Died Before Leaving Hospital:

Case 15.—Weight, 3,435 gm. (4½ days old). R. O. P. Difficult delivery. Rotation. Necropsy: intracranial injury; pneumonia.

Case 16.—Weight, 3,025 gm. (19 hours old). R. O. P. Fetal heart, 100. Necropsy: birth hemorrhage over cerebral cortex into posterior fossa and into both lateral ventricles.

Case 17.—Weight, 2,670 gm. Pelvis normal. R. O. P. Labor, ten hours. Perineal forceps. Died in three hours. Prematurity; congenital malformation of heart. No necropsy.

Case 18.—Weight, 3,540 gm. Pelvis, flat rachitic. Wassermann reaction negative. Labor, twelve hours. Perineal forceps. Died in one and a half days. Necropsy: indeterminate. Clinical, birth hemorrhage.

Case 19.—Weight, 4,030 gm. Pregnancy with myoma. Pelvis normal. Labor, seven hours. O. L. A. Midforceps. Necropsy: hemorrhagic disease of new-born; intracranial injury; icterus.

Case 20.—Weight, 3,200 gm. Died fourth day. Icterus. Blood smear raised question of leukemia. Necropsy: congenital icterus; hemorrhagic erosion of gastric mucosa; hyperplasia of spleen with phagocytosis of red blood corpuscles; accessory spleen.

Case 21.—Weight, 2,840 gm. Pelvis generally contracted. R. O. P. Labor, nineteen hours. Podalic version. Died in two and one-fourth hours. Necropsy: congenital syphilis; fracture of clavicle.

Without Seminarcosis

Still-Born:

Case 22.—Weight, 2,710 gm. Toxemia of pregnancy. Placenta praevia marginalis. No necropsy.

Case 23.—Pregnancy with carcinoma of ovary. Dead on admission. Cesarean section. Wassermann test not made. Necropsy: atelactasis.

Case 24.—Weight, 3,750 gm. Pelvis normal. Prolapsed cord. No necropsy.

Case 25.—Weight, 3,520 gm. Pelvis generally contracted. O. L. A. Labor, fifty-seven hours. Necropsy: overlapping cranial bones; caput; atelectasis.

Case 26.—Weight, 3,963 gm. Pelvis atypical, left half flat. Test of labor. Cesarean section. Necropsy: partial atelectasis.

Case 27.—Weight, 2,500 gm. Pelvis generally contracted. Rupture of uterus through old scar. Cesarean section. Necropsy: atelectasis.

Case 28.—Weight, 2,680 gm. First of twins. Prolapsed cord. Valvular disease, chronic cardiac; toxemia of pregnancy. Wassermann reaction negative. Necopsy: osteochondritis; atelectasis; prematurity.

Macerated:

Case 29.—Weight, 2,625 gm. Toxemia of pregnancy. Wassermann reaction negative. Breech extraction. Necropsy: osteogenesis imperfecta; interstitial hepatitis; pancreatitis; nephritis.

CASE 30.—Weight, 2,870 gm. Labor, three hours. Premature delivery. Brought to hospital following automobile accident. No fetal movement. Premature detachment of placenta. Necropsy: still-born, macerated.

CASE 31.—Weight, 4,120 gm. Dead on admission. S. D. A. Breech extraction. Wassermann reaction negative. Necropsy: enlarged thymus; hemorrhages into medulla of kidney.

CASE 32.—Pelvis normal. Dead on admission. Pregnancy with acute nephritis, hydronephrosis, acute hemorrhagic cystitis, contraction ring of Bandl. No necropsy.

CASE 33.—Weight, 3,980 gm. Pelvis normal. Labor, sixty-eight hours. Pregnancy with syphilis, hydronephrosis, general arteriosclerosis, myoma, chronic pleurisy. Necropsy: atelectasis; maceration.

Died Before Leaving Hospital:

CASE 34.—Weight, 3,640 gm. Wassermann reaction negative. Spontaneous delivery. Died in two days. Necropsy: congenital defect of hepatic flexure of colon, with communication between lumen of colon and peritoneal cavity; rupture of umbilical vein in falciform ligament; necrosis of convoluted tubules of kidney; general peritonitis.

CASE 35.—Weight, 3,890 gm. Wassermann reaction negative. Normal pelvis. O. L. A. Perineal forceps. Died in two days. Intracranial injury. No necropsy.

CASE 36.—Weight, 3,175 gm. Small pelvis. Spontaneous delivery. Died two days after birth. Intracranial hemorrhage. No necropsy.

CASE 37.—Weight, 2,850 gm. Died fifty-five minutes after birth. Foot, hand and breech presented. Difficult extraction. Head hung within cervical ring. No necropsy.

CASE 38.—Weight, 3,205 gm. Funnel pelvis. L. S. A. Labor, nine and a half hours. Breech extraction. Died four hours after birth. Necropsy: subtemporal and subdural hemorrhage (Rt.).

COMMENT

We feel that scopolamin-morphin seminarcosis is the most effective method of relieving the first stage pain of childbirth. In the first thousand cases reported, amnesia and otherwise perfect results were present in 80 per cent. of the cases. In the series of the second thousand deliveries, perfect results were present in 85.3 per cent. of the cases, with no success obtained in 5.07 per cent.

Although some of the patients were not relieved of their pain and remembered more or less of what transpired, the fatigue and exhaustion following delivery were in most instances absent.

In many of the multiparas we use nitrous oxid analgesia quite extensively. On some of the longer and harder multiparous labors we use the regular scopolamin-morphin method; in still others we combine the administration of nitrous oxid with a modified scopolamin seminarcosis, in which the scopolamin is complemented from the beginning with nitrous oxid or in which, after the patient is lightly under the influence of scopolamin, she is kept at that level and her pain controlled until delivery by nitrous oxid inhalations.

In October, 1921, a new-born service was created in Barnes Hospital, the Obstetrical Service of Washington University Medical School. This was a combined obstetric and pediatric service. A member of the staff who is a resident pediatrician of the St. Louis Children's Hospital, and a full-time member of the obstetric staff are in supervision of the service. These two men meet daily, go over the new-born infants completely, and supervise their feeding. By this method, many of the problems that arise in a nursery can be intelligently handled because the mother's and child's interests are both represented by men who are conversant with such work.

Since this service has been in operation, the pediatrician in charge has noted nothing unusual in the children born in scopolamin-morphin seminarcosis, nor has there been any way at all of recognizing these children by their behavior. The pediatricians who follow most of the children of the private patients and also those of the ward mothers reporting to regional well babies' and feeding clinics have never expressed themselves adversely in regard to the method of seminarcosis.

CONCLUSIONS

1. We feel that the methods for the conduct of labor as we use them can be carried out only by trained obstetricians in a maternity of moderate size, and that they are not to be attempted in poorly appointed homes by any one, or under any circumstances by the average general practitioner. These individuals do not do operative surgery under the same conditions that they do their obstetrics, and the responsibility is as great in obstetrics as in operative surgery. Furthermore, it is to be used only by those who are willing to watch the patient closely from the onset of labor until it is terminated, or by those who have an organized hospital staff or trained assistants at their command.

2. The method is particularly applicable to the primiparous patient, but can be used very successfully in many multiparas, or also in multiparas in a modified way.

3. The method cannot be used to the exclusion of the other methods of analgesia and anesthesia, but should be used in combination with these other means. The method in no way displaces anesthesia at the time of expulsion; chloroform in very small amounts, or nitrous oxid or ether are used at this time, making any operative procedure readily carried out without resistance on the part of the patient and under strictly surgical conditions.

4. In primiparas, when seminarcosis is employed labor is best terminated by episiotomy and a perineal forceps delivery; this procedure, however, is by no means necessary, as many of the patients will deliver spontaneously.

5. That the pains of the first labor remain indelibly fixed in the minds of many mothers is undisputed, and is perhaps chiefly responsible for many one-child marriages, and is evidenced by the fact that many patients seek relief in subsequent pregnancies. This merely emphasizes one field of its usefulness.

6. Asphyxia is not increased in frequency, although slight oligopnea is sometimes seen

7. The chief disadvantage of the method is that it is time consuming, and that the patient must be constantly watched throughout labor by those who are familiar with the method; few busy obstetricians are willing to give the required amount of time and individual attention to one patient.

Problems of Conduct.—The fully equipped physician must know more than disease and drugs; he must know human urges, fundamental and acquired, and their dominion over men. The lives of really great physicians from Hippocrates to Osler testify to this. Only too true is Mathew Arnold's oft quoted statement to the effect that two thirds of human life has to do with problems of conduct; so in medicine, we might agree with Danna, when he says that Arnold's statement is even more true in medical practice, that two thirds of efficiency and success depend on conduct and character and only one third on technic.—Pollak, B. S.: *J. M. Soc. New Jersey* **20**:289 (Sept.) 1923.

OBSTETRIC ANALGESIA AND ANESTHESIA

A CONSIDERATION OF NITROUS OXID-OXYGEN AND VARIOUS COMBINED METHODS *

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There can be no controversy at the present time as to the desirability of relief of pain in labor, provided relief may be had with safety. We believe that our experience during the last ten years has shown that a high degree of relief may be obtained without sacrificing the safety that should be the physician's first concern.

We wish to place ourselves on record as stating that in our opinion chloroform has today no place in obstetric practice. Experimentally, it has been abundantly shown by Graham, Woodyatt and by one of us (C. H. D.) that definite degenerative changes occur in the young in utero, these changes being present and demonstrable after subjecting the pregnant animal not only to complete anesthesia comparable to that used in surgical procedures, but also after intermittent and very light anesthesia, such as would be administered to a woman in the second stage of labor. The work of these different investigators has also shown a marked variation in the extent of tissue damage found in the young of pregnant animals subjected to chloroform and ether, the degeneration being far less with ether than with chloroform. The administration of nitrous oxid to pregnant animals has shown less tissue damage than either chloroform or ether. In those cases in which considerable doses were given and changes were demonstrable, they were more nearly comparable to those produced by asphyxiation than to the degenerative changes typically found after the use of chloroform, and, to a less degree, after ether.

Clinically, we must admit the likelihood of the production of degenerative processes in the organs of the parturient woman similar to those known to occur in laboratory animals, and evidence of this has not been lacking on the necropsy table. In addition to this very real and adequate reason for its rejection, we may add its known effect, when used in sufficient quantity and over a sufficient length of time to afford an appreciable relief, of slowing the labor by lessening the force and frequency of the uterine contractions.

This leads to efforts to stimulate the flagging uterine musculature, which means usually that pituitary extract is administered, a practice which, with infrequent exceptions, can only be condemned. One writer, indeed, recommends the combination of chloroform and pituitary extract, in order that pain might be relieved and at the same time the labor not delayed, a practice which, we are assured, would not be favored by the majority of careful obstetricians. We rarely use pituitary extract until after the second stage of labor.

Our measures for pain relief must be divided into those which are applicable in the first stage and those which may be used in the second stage. The use of inhalation anesthetics during most of the first stage is not recommended. Nitrous oxid may be begun late in the first stage, as we shall indicate later. Our chief reliance for relief during the first stage must be in drugs administered hypodermically, by mouth or by rectum. The drug chosen may be one of the opiates, morphin, codein, heroin or pantopon, alone or combined with scopolamin (hyoscin) and given hypodermically, or chloral by mouth or rectally. Our preference is for one of the opiates, usually in combination with scopolamin, as morphin-scopolamin or pantopon-scopolamin, the scopolamin being repeated if needed. In a long first stage it has seemed quite clear to us that the parturient went through long hours of dilatation with less fatigue and nervous wear and tear, and approached the second stage with her physical powers more nearly intact, than if the first stage had been without relief. In our use of these drugs we have made no attempt to approach the so-called twilight sleep, or to produce amnesia. Our only desire has been to dull somewhat the severity of the pain, to "take the edge off," and perhaps to produce a light degree of somnolence between pains. This may usually be accomplished with morphin, one-sixth grain (0.0108 gm.), and scopolamin, one one-hundredth grain (0.00065 gm.), given in two parts, from fifteen to thirty minutes apart. Should by any chance a woman whose susceptibility to opium is above the average cease to have contractions after the administration of hypodermic medication, we do not resort to the giving of pituitary extract, but patiently await the spontaneous resumption of labor. However, this is not a frequent occurrence. We would emphasize the caution already given by others that no opiate be given within three or at least two hours of delivery, because of the possible effect in narcotizing the child, which may render it slow to breathe. It has seemed to us that pantopon is less likely to produce this result than the other alkaloids of opium. This makes it necessary for the physician to note carefully the apparent rapidity with which the labor is proceeding and the progress already made. Experience here is of decided value. Cautiously used, we have seen no unfavorable results; and we have come to believe that hypodermic medication is a valuable addition to our means of lessening suffering in labor.

At the end of the first stage or, in some cases, when the first stage is nearing its end, it is necessary to add some form of inhalation anesthetic, and, in our experience, nitrous oxid or the combination of nitrous oxid and oxygen has been by all means the most satisfactory. We desire that the labor, which at this stage is ordinarily in active progress, shall not be delayed, and still we desire to relieve the mother of the severe pain she would otherwise experience during the remaining hour or two which the second stage will consume.

Nitrous oxid is the one thing yet thoroughly tested which will relieve the pain of labor without at the same time diminishing the force and frequency of the uterine contractions, and which may be used for periods up to several hours without appreciable loss in the force of the uterine contraction.

We have felt that, as a general thing, it is wise to restrict the giving of gas to periods not exceeding three hours. We have both, on rare occasions, extended its use over much longer periods without untoward result, but believe that very extended periods of administration may produce some fetal asphyxiation. A two-hour period will include the great majority of cases.

The gas may be given pure or mixed with oxygen. In cases in which a small number of breaths suffice to

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control the pain of a contraction, the nitrous oxid alone will do. In others, oxygen may be combined in varying proportion as the individual patient may need.

One most essential point to which we have both drawn attention in previous communications is the necessity of commencing the giving of gas for each pain immediately on the onset of the contraction. When it is not begun till after the pain is well started, it is not possible to obtain the maximum relief, and in many cases there is but little or no benefit. Failure to pay attention to this point has been responsible for most poor results.

The number of breaths of the gas or mixture varies from three to six in the majority of cases. It is necessary to ascertain in each case what dosage is needed, and to increase it as needed. This is not difficult, and a little experience renders it easy. We may mention also that use of hypodermic medication in the first stage often renders the giving of gas in the second stage easier.

The intermittent administration of gas may be continued, as we have indicated, through the second stage till near its end, when light anesthesia is needed. As the head distends the perineum and delivery is evidently at hand, we have found it to be of decided advantage in most cases to add a little ether, which may be done by means of the ether attachment with which most gas machines are equipped. As delivery is actually to be accomplished, the patient is told to breathe rapidly and deeply so that a brief unconsciousness is produced, during which delivery occurs. A method which in our work has been very satisfactory is as follows: After the head has advanced till delivery is imminent and the woman is taking the gas-ether combination, we rapidly deepen the anesthesia to unconsciousness, and then by a Kristeller expression cause the child to be delivered. As the head emerges, the ether is turned off, and, as the delivery is completed, the anesthetist rapidly empties the bag of the gas apparatus, and then allows the mother to breathe pure oxygen. This, we have thought, helps the child rapidly to attain a normal pinkness. If the cord is not pulsating, oxygen may be given directly to the baby by means of the ordinary nasal inhaler. This is very important in all cases in which there is any evidence of fetal asphyxia or delayed breathing. In many cases the mother will be wholly unaware of the delivery.

When it is desired to do an episiotomy, if the gas is continued from one pain through the interval between pains and into the next pain, as a rule the incision may be made without pain and often without the mother's knowledge.

While we desire particularly to emphasize the value of this mode of pain relief in spontaneous labor, as it is in these that effective analgesia is most frequently lacking, we have found that nitrous oxid-oxygen is applicable to the majority of obstetric operations. Here, however, the problem becomes one of proper administration of surgical anesthesia. This is a little more difficult, but is entirely possible and practicable and quite within the power of any reasonably well trained anesthetist.

The most frequent obstetric operation is the outlet forceps operation. This, in the majority of cases, may be done under gas-oxygen with entire satisfaction. The anesthetic is carried to the point at which voluntary motion does not occur when instrumentation is begun, but it is not necessary or desirable to push it to the point of complete relaxation. The operation is then carried out in the usual way. We have found that with an anesthesia so light that uterine contractions continue, the expenditure of tractive force on the forceps is less than is otherwise needed, with a correspondingly lessened amount of operative trauma on the fetal head. The amount of tractive force needed may be still further reduced by using (Kristeller) pressure on the fundus of the uterus.

The ordinary perineal repair is done with ease under a properly given gas anesthetic. There is usually no objection to ether for the repair.

The more difficult forceps extractions, those done on the head lying in the midplane or engaged in the pelvic inlet, may also be carried out satisfactorily under gas. We would here, however, voice the caution that when deep narcosis is to be maintained for a protracted period prior to delivery, ether be used, as prolonged administration of gas experimentally has been shown to produce tissue change in the young of laboratory animals, comparable to asphyxiation.

Cesarean section is perfectly feasible under gas, provided an anesthetist is at hand of the degree of skill that should be required of one who is to anesthetize any patient who is to have a laparotomy.

A very definite advantage which the use of gas for operative work possesses is the increased activity of the uterine muscle after anesthesia. This to a considerable degree diminishes bleeding, and measures for the control of blood loss are needed much less frequently than when working with anesthetics which cause a more marked muscular relaxation.

This fact places the only real limitation on the use of gas for operative work that we have found. Operations that require marked uterine relaxation for their safe carrying out are better done under ether. Version and manual rotation of the head are the outstanding exceptions to the use of gas. Those who desire to use the method described by Kielland for the introduction of his forceps on a head in the transverse or occiput posterior position, with the intrauterine rotation of the anterior forceps blade, should use ether to avoid wounding the unrelaxed uterine wall. We believe, therefore, that nitrous oxid-oxygen may be applied to almost all obstetric operations, the only exceptions being those requiring marked uterine relaxation. During analgesia while the child is in the uterus we believe that rebreathing should be avoided, and it is better that the intermittent administration of gas should not exceed three hours.

In the experience of both of us, the use of nitrous oxid and oxygen has proved safe. In support of this statement we may give the results of our own experience.

We are quite certain that neither our maternal nor our fetal mortality has been unfavorably influenced by our use of nitrous oxid. The maternal mortality in a recent series of 1,029 cases, as observed by one of us (W. C. D.), comprising the work of the Evanston Hospital Maternity for 1921-1922, was 0.39 per cent. This series includes a considerable number of cases in which pathologic conditions were present. Of the patients, 447 were primiparas and 582 were multiparas. Our fetal death rate for the same series of cases, excluding premature babies under eight months and including all infants dying between the admission of the mother to the hospital and her discharge, usually on the twelfth day, was 3.5 per cent. Including all prema-

ture babies, it was 4.6 per cent. Some of these were cases of six months' gestation, in which the child perished almost at once. Certainly, these figures do not show the operation of any factor which increases danger to either mother or child.

We believe, on the contrary, that the safety of both mother and child is increased by proper pain relief.

TABLE 1.—*Deaths from Unavoidable Causes*

Condition	Number
Small twin (weaker one of pair)	1
Atelectasis	3
Spina bifida	1
Congenital heart disease	3
Hemorrhage of new-born	3
Toxemia of pregnancy (dead before delivery)	1
Anencephalus	1
Prematurity	3
Dead in utero before induction of labor	1
Total	17

Not seldom, in long labors, as, for example, in cases of a relative disproportion, the woman may be carried through the first stage with the help of morphin, possibly with the addition of scopolamin, so that she may approach the second stage with her physical forces as nearly intact as possible. Then, with analgesia, she may go through a tedious second stage, aiding herself by voluntary effort, when, were she left without relief, as under older methods she usually was, she might soon become discouraged from the combination of pain, fatigue and apparent lack of progress. Under gas, however, such cases may often be carried on till, after two or three hours, a comparatively easy low or mid-forceps operation may suffice to terminate a labor which, had we been compelled to intervene earlier, would have required a more formidable operation. This cannot be without a favorable effect on maternal morbidity and fetal mortality.

Another factor which has seemed to us of value is that our patients after labor are far less exhausted physically and mentally than when they are permitted to pass through the second stage without adequate relief. We believe that this factor has a favorable influence on the puerperium.

As to the causes of the fetal mortality and their possible relationship to anesthesia, it may be instructive to review the fetal deaths in the series of 1,029 cases

TABLE 2.—*Deaths from Obstetric Causes*

Condition	Number
Breech extraction in primipara	2
Cervical cesarean section after forty-eight hours labor before admission (ether anesthetic)	1
High forceps	4
Flat pelvis; arm and cord prolapse	1
Asphyxia; cord about neck and arm	1
Breech with cord prolapse	2
Version and extraction	1
Placenta praevia (two treated by version)	3
Transverse arrest; delayed extraction	1
Total	16

to which we have referred. There were 1,046 infants born in this series. Of these, forty-nine were lost at some time between the admission of the mother and her discharge, a total mortality of 4.68 per cent. Excluding fourteen premature babies, prior to the eighth month, we have a mortality of 3.5 per cent. Of these, seventeen were lost from causes which could not be ascribed to faulty obstetric technic or to anesthesia. These causes appear in Table 1.

We have been able to secure necropsies in the majority of our cases of fetal death. In the cases of atelectasis and congenital heart disease appearing in Table 1, the diagnosis was substantiated by necropsy.

In addition to these, there were sixteen other fetal deaths in which obstetric causes are found sufficient to cause death. These causes are shown in Table 2.

It would seem obvious that in these cases we have indicated an adequate cause for each death, and that none of these can fairly be called an anesthetic death. In approximately 2,000 cases preceding those which make up the series from which these figures are taken, we had no fetal death which could be regarded as caused by the anesthetic. We believe, therefore, that we are fairly entitled to state that a proper use of nitrous oxid does not carry with it a risk to the child.

The figures just given show the work of a number of persons, not only the obstetric attending staff but also cases delivered by interns, and a moderate number

TABLE 3.—*Analgesia Cases* *

		Primiparas	Multiparas
Chicago deliveries	109	67	42
Milwaukee deliveries	296	179	117
Total in series	405	246, or 60%	159, or 40%

METHOD OF DELIVERY AND MATERNAL MORTALITY

Total deliveries	405
Spontaneous (vertex)	242
Low forceps	61
Midforceps	62
High forceps	8
Forceps to after-coming head	2
Breech extraction (includes eight versions)	23
Vaginal hysterotomy before forceps	2
Cesarean sections	7
Maternal deaths (eclampsia)	1

* Series 1 (C. H. D.)

TABLE 4.—*Morphin-Scopolamin Analgesia in First Stage* *

		Number
Total cases		123
Maternal mortality		0
Fetal deaths (hemorrhagic disease)		1
Primiparas		84
Multiparas		39
Spontaneous deliveries		60
Low forceps (primiparas)		29
Midforceps	primiparas	22
	multiparas	10
High forceps (primiparas)		2

under the care of physicians who are given the facilities of the hospital and who are careful and conscientious men, although not all of comprehensive obstetric experience.

ANALYSIS OF PRIVATE CASES

The results obtained in a smaller series, all of which were under the observation of men of experience and training greater than the average for the preceding series, may be shown by a tabulation of our own recent results.

Of the deaths shown in Table 8, only two followed operative delivery, one a version done for placenta praevia, the woman having been sent into the hospital after considerable hemorrhage outside, and one in which death occurred one day after high forceps following a long labor. Necropsy showed no cerebral injury.

The figures given in both the individual series do not show the operation of any factor that increases fetal danger. On the contrary, they would seem to indicate that operative work under gas anesthesia in experienced hands is quite safe. The character of the anesthetic cannot lessen danger from improperly done

operative procedures, but an unsafe anesthetic may increase the operative risk. That danger to the child is not increased, we believe, is evidenced by the results we have given.

We wish strongly to emphasize our belief that proper anesthesia is an important thing. In obstetrics, as in any other branch of surgery, a competent anesthetist is

TABLE 5.—*Fetal Mortality in 405 Deliveries (411 Babies)**

CAUSES OF STILLBIRTH	
Macerated	4
Ablatio placentae and true knot of cord	1
Anencephalus	1
Concealed prolapse of cord	1
Version after attempted forceps	2
Total	9
CAUSES OF POSTNATAL DEATHS	
Premature, seven months	1
Premature, blue baby (one of triplets)	1
Erysipelas after circumcision	1
Congenital heart defects	3
Hemorrhagic disease of new-born	1
Total	7
Total fetal mortality, 3.9 per cent.	

* Series 1 (C. H. D.).

indispensable. The importance of the anesthetist as a member of the surgical team has of late years been insisted on more and more. The obstetrician, who is the only surgeon who is responsible for two lives at once, certainly should demand at least as adequate service as is given to patients of other sorts. The practice in some institutions, too, of providing trained service for the drunken vagrant with a scalp wound, while permitting parturient women to undergo major operations with anesthetics given by inexperienced interns or others, merely because the operation occurs at night or "because it always has been so," is little short of criminal.

Were it possible for every patient to have the services of a physiciain who has devoted especial attention to anesthesia, we should be very fortunate. This is not possible, first, because there are far too few of them to go round, and, secondly, because it is economically impossible to provide such service. Not all patients can afford the extra cost, and few hospitals can pay the salaries needed to command the time of really expert medical anesthetists. Specialists in anesthesia are as

TABLE 6.—*Private Cases, Jan. 1, 1921, to March 31, 1923**

Total number		400
Primiparas (40 per cent.)	160,	
Multiparas (60 per cent.)	240	
Spontaneous deliveries		265
Low forceps		85
Midforceps		18
High forceps		6
Breech extraction (including four versions)		13
Cesarean sections		13

* Series 2 (W. C. D.).

generous with their time as those who work in other fields of medicine; but to expect them to provide service for the great numbers of part pay patients, to say nothing of free patients, would be to impose an impossible burden. The nurse anesthetist, however, fills a valuable place and makes it possible and practicable to give all patients a far higher average quality of service than is otherwise possible.

We believe that chloroform has been demonstrated experimentally and clinically to be toxic, even when given in small amounts. It should be completely discarded.

Ether may be used as a routine anesthetic by those who cannot, for any reason, make use of gas. Ether is of value, when gas analgesia is given at the time of delivery, to promote relaxation of the pelvic floor muscles and to aid in producing a brief complete anesthesia. It should be used as the anesthetic of choice in operations requiring marked relaxation of the uterine muscle.

We wish to state that we have found no theoretical or clinical evidence to indicate that a properly given gas analgesia or short anesthesia carries with it any risk to mother or child.

We believe that a careful use of some one of the opium derivatives is of value during the first stage, and that the action of these may be in many cases advantageously supplemented by scopolamin.

Because of the danger of some reduction of the oxygen content of the fetal blood, gas should not be used when fetal asphyxia is feared; and when anesthesia to the surgical degree is to be maintained over long periods of time, ether should be chosen. The latter contingency does not arise often with the experienced obstetrician.

We also feel that analgesia is best restricted to periods of three hours or less, as a rule.

One of us (C. H. D.) has observed that after deep gas anesthesia the fetal heart shows changes which,

TABLE 7.—*Fetal Mortality in Private Cases**

Total number of infants lost	14
Premature (prior to 8 months)	7
At term	7
Total fetal mortality (including premature infants) 3.5 per cent.	
Mortality infants at term (all deaths—admission to discharge of mothers)	1.75 per cent.

* Series 2 (W. C. D.).

TABLE 8.—*Causes of Death in Infants at Term**

Ablatio placentae	3
Atelectasis (placenta praevia at 8 months; child lived one day)	1
Asphyxia (cord about neck and arm)	1
Hemorrhage (placenta praevia; child lived one hour)	1
Atelectasis (after high forceps); necropsy	1

* Series 2, private cases (W. C. D.).

noted by auscultation, resemble those heard in asphyxia. This would seem to agree with the experimental observation already noted of visceral changes similar to those of asphyxia which were found in laboratory animals after prolonged and deep gas anesthesia.

CONCLUSION

We would urge that obstetric patients be thought of as individuals. The analgesic or the anesthetic should be chosen for the operation and the particular needs of the patient. An opiate alone or in combination with scopolamin is often indicated for the long first stage of labor. Ether, unless contraindicated, is the inhalation anesthetic of choice for the longer operations during pregnancy and labor. Nitrous oxid-oxygen may be used for examinations and short operations, as well as for intermittent analgesia during the second stage of labor.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FARR; BONAR AND MEEKER; SCHWARZ AND KREBS, AND DANFORTH AND DAVIS

DR. H. A. STEPHENSON, San Francisco: Regarding the first two papers read, I think that, perhaps, the difficulties of giving an anesthetic were probably not stressed as much as those of us who are not familiar with the technic would desire. The difficulty of Dr. Meeker's injection seems to be

rather excessive. Certainly, unless the method becomes more widespread, we cannot accept it at present as a procedure that may be applied to cases in general. Dr. Krebs' paper on scopolamin-morphin seminarcosis is most conservative, and, in the main, I agree with most of the things he has to say. There are certain difficulties to be met, and it can be used only in selected cases. In the cases at Stanford University Hospital in which this treatment has been used, we have felt that the drug is somewhat difficult to control. Once given, its action cannot be influenced, and one must wait for the effect to wear off before declaring the patient out of danger, provided untoward effects arise. There does seem to be certain danger to the mother in scopolamin-morphin seminarcosis as well as to the child, and as a result of some of these difficulties we have not followed the use of scopolamin-morphin seminarcosis, particularly the method as given in the Freiburg clinic. In the last five years we have used nitrous oxid and oxygen analgesia in practically all cases. I agree absolutely with Dr. Davis in his contraindications to nitrous oxid and oxygen, but I think that in the majority of cases we can give it without particular danger to the patient or to the child. It is a method that can be controlled almost at will, almost instantly, and the anesthetic can be discontinued promptly, should occasion arise. The advantages in the second stage, I think, are without question. In the first stage we have not used scopolamin, but we have depended almost entirely on chloral hydrate or potassium bromid by mouth or by rectum, depending on the patient, and occasionally, in selected cases, by hypodermic injection of some of the morphin derivatives. It seems to me that in the majority of cases the pain of the first stage can be controlled almost completely by this procedure, and in the second stage we use the nitrous oxid and oxygen technic, as described by Dr. Davis. Our results have been almost parallel with his. In the last 1,760 patients at the Stanford University Hospital in which the gas was used in the second stage, we have had about 8 per cent. of fetal mortality; a rather interesting thing is that among these dead babies 68 per cent. of the mothers showed signs of syphilis either by a positive Wassermann reaction, by findings in the baby at necropsy, or by characteristic placental histologic findings.

DR. W. FRANCIS B. WAKEFIELD, San Francisco: It is highly gratifying that efforts of one kind or another are being made by obstetricians to ameliorate the tortures of childbirth. I think that out of the chaos some method will eventually be found that will be satisfactory to us all. For several years, in my private work, I have been using scopolamin-morphin anesthesia in the first stage of labor. During most of the second stage it holds, but I have been using gas-oxygen for the stage of delivery. I have yet to see any ill effects in either mother or infant. The chief criticism seems to be that scopolamin is apt to asphyxiate the child and to increase the fetal death rate. My work is entirely private and, therefore, the class of cases is much superior to that encountered in ordinary clinical work: In 1,000 cases, four mothers went into labor with dead babies. They were recognized as being dead before labor commenced. Of the remaining 996 who went into labor with live babies, we had eight stillbirths, a mortality of slightly less than 1 per cent. I have never seen any effect at all from scopolamin on the child. I have never seen a child asphyxiated from the use of scopolamin. The use of gas-oxygen, however, seems necessary during the stage of expulsion. I have seen asphyxiation occur at this stage if gas-oxygen is not used very carefully. The asphyxiation is only a temporary affair, however. I believe in the judicious use of scopolamin-morphin in the first stage and in the use of nitrous-oxid and oxygen in the second stage, ordinarily at the end of the second stage. By this means I believe we have a most perfect obstetric anesthetic. My technic is practically the same as Dr. Schwarz's.

DR. RUDOLPH W. HOLMES, Chicago: I was one of the first to employ scopolamin as an obstetric analgesic in this country. While in Europe, in 1900-1901, it was incidentally told me that Steinbuckel had thought it could be advantageously used for that purpose, so I brought some tubes of the drug back with me. I have had every accident from its use which has been declared to be deleterious to mother and baby, with the exception of death of the mother. From 1901 I have used scopolamin-morphin as an analgesic intermittently. I have never used it as a routine. We hear much of the relative merits of scopolamin and hyoscin, and many believe there are radical differences between them. The fact is, however, that they necessarily must be identical in that practically all these drugs are marketed by one firm. Knowing that the two are isomers, have identical spectroscopic deflection, and are physiologically the same in action, this firm produces alone hyoscin from hyocyamus, and disposes of the product under the two labels as the buyer may desire. The allegation that "scopolamin" is alone safe and efficient is pure commercial propaganda. At least 25 per cent. of patients given "twilight sleep" have more or less nervous excitement; 10 per cent. will have very active delirium, to the few who will be actually maniacal. Ever since Karl Braun recommended opium for obstetric uses, about 1840, there have been reiterated spells of enthusiasm for morphin, alone, or with some adjuvant, as an obstetric analgesic; and, promptly, others have shown the dangers of giving morphin to the woman in advanced labor. The members of the New York Obstetrical Society, many years ago were enthusiastic over morphin as an analgesic until the rapidly accumulating evidence showed its malign influence, on the baby especially. Large doses of morphin may be exhibited to a pregnant woman with relative immunity from harm. Small doses given shortly before delivery (an hour or two) may be followed by a deeply narcotized child that will not survive. Scopolamin (hyoscin), being a synergist to morphin, merely accentuates this danger, as both paralyze the respiratory center. As I see it, sacral analgesia has one great advantage—it has such technical difficulties of administration that it will not be popular. The great disadvantage is that its efficiency endures about two hours. Who will be able to predict the appropriate time for its administration to be within this limit? I cannot agree with Dr. Schwarz that chloroform is a safe anesthetic. On the contrary, I substantiate Dr. Davis' statement that it is a very dangerous method of securing anesthesia.

DR. W. D. HAGGARD, Nashville, Tenn.: I have been greatly interested in the subject of anesthesia. In 1908, I presented to this section the first report of the Anesthetic Commission, in which we condemned the use of chloroform as a routine anesthetic in general surgery. Chloroform is a dangerous drug, and, perhaps, in obstetrics it is more dangerous. There was a time when we thought it was not dangerous in obstetrics; that it was antidoted by the pain and was not as dangerous a drug as in other types of surgery; but the papers today show that there are some definite dangers in its use in obstetrics. In that report we advocated for the first time the use of nitrous oxid as an agent with increasing possibilities as an anesthetic in general surgery. I have used it continuously since, and find that it can be used as the routine anesthetic in surgery and in obstetric work. We are indebted to Dr. Farr for the interesting studies he has made and for his enthusiasm and persistence in calling attention to the importance of local anesthesia. In general surgery we are coming to use more and more local anesthesia. He is perfectly right when he says that we should never operate for strangulated hernia under general anesthesia. In pyloric stenosis, a local anesthetic is infinitely preferable. In 1910, I made a recommendation to the Section on General Surgery that from the standpoint of increased safety we should never use a general anesthetic in congenital pyloric stenosis. We have no more trouble with these babies than if the mother was making the toilet. I recall with interest that twenty years ago, when the first era of spinal anesthesia was introduced in this country, I delivered a few cases under this anesthesia. It was surprising to see parturient women having contractions of the uterine musculature lying placidly and having no pain. If it were only safe, it could be used as a routine in obstetrics. A trial should be given sacral anesthesia in obstetrics. It is very satisfactory in prostatic and rectal work. If it is possible, and it certainly is, to use local anesthesia in general surgery, there is no reason why it should not be used in obstetrics. I feel that the era of local anesthesia has dawned and that we are going to do more and more perfect work, and that we are going to follow the rule

of greater gentleness in surgery. We have learned that we cannot use "a hand of iron in a glove of rubber" with success.

DR. HENRY PARKER NEWMAN, San Diego, Calif.: I should condemn this work, as every obstetrician should, when we remember that obstetrics is being done by every one who has a diploma. This subject is most important; it permeates the entire social fabric of this country and in all countries, and we must do our best to see that the proper type of mothers is brought before us. They are not the type of a few decades ago. They require the assistance of a trained obstetrician. I am free to say that the methods here offered are comparatively safe and, in the main, will check that extreme morbidity, if not mortality, in child-bearing of a few decades ago. We still have too much morbidity. Sixty-five per cent. of womankind are maimed more or less by child-bearing. That is a conservative estimate. It ought not to be. It will not be if we give it the attention that the present day obstetricians advocate.

DR. FRANK W. LYNCH, San Francisco: The discussion brings out clearly that there is some danger attending any method aiming to relieve the pains attending labor, yet I am perfectly convinced that the endeavor is well worth while and that there is a field for application in childbirth of all the methods that have been brought forward today. It is twenty-two years since Corning, in New York, started in this country the movement for epidural and intradural anesthesia. Soon afterward I used spinal anesthesia in a series of nearly a hundred cases, as a result of which I feel that this present modification (its granddaughter), sacral anesthesia, has a certain place, a limited but a certain place in obstetrics. For instance, in labor complicated by pneumonia or heart disease, when it is necessary to hasten labor or to deliver with instruments, sacral anesthesia is the method of choice. The great objection to the method is that a drug given in this manner cannot be recalled. I also feel that scopolamin-morphin has an undoubted field, since certain women become nervous wrecks as a result of labor. Such a catastrophe could be avoided if the need for scopolamin-morphin had been recognized before labor. Fortunately, this nervous complication is not often seen; but no one can practice obstetrics as a specialist and not know that it is true. Gas-oxygen has a great place and a very wide field, yet after an experience of more than 3,500 cases of gas-oxygen anesthesia in labor, and being largely responsible for its introduction into this country, I feel that this drug as ordinarily given has its dangers. We must insist on analgesia rather than anesthesia. Our secretary called attention to the fact that any inhalation anesthetic now in use may produce liver changes. The entire discussion calls attention to the fact that it is a very difficult matter to train an obstetrician.

DR. ROBERT E. FARR, Minneapolis: The discussion, which centered largely about obstetrics, is what we may expect in this organization. We are, however, all aiming at the same goal. I regret that some of the speakers took such a radical position. Having been considered a radical myself, I feel that I am in a position to criticize. I do not believe one should condemn scopolamin any more than I believe one should use local anesthesia exclusively. I left out one point during my discussion, which is the use of the physiologic test in abdominal surgery when using local anesthesia. You will remember what I said in regard to abdominal exploration. I believe that one can learn more in abdominal surgery when operating on a conscious patient and applying the physiologic test of attempting to reproduce the patient's symptoms by irritation of the suspected viscus than one can learn by making a blind exploration. The use of local anesthesia and the carrying out of the technic it requires demand careful training. I would suggest that one may much more quickly learn to use local anesthesia, provided its use precedes the use of general anesthesia in every instance, so that the conscious patient may aid one in estimating the degree of anesthesia present. It will be much more difficult for an individual to learn to use local anesthesia, provided the patient is under general anesthesia before the local anesthesia is begun.

DR. W. R. MEEKER, Rochester, Minn.: I regret that time did not permit me to show more slides illustrating the technic of the epidural and the transsacral methods of sacral nerve block. The technical difficulty of these procedures has been greatly exaggerated by the discussers of this paper. These methods are no more difficult to perform than lumbar puncture, the two being more difficult in the obese individual for similar reasons. The whole question is that of safety to mother and child. In the field of general surgery, patients are often encountered in whom the added load of a general anesthetic is regarded as too great for the patient to withstand. There are those, today, no doubt, who owe their lives to the employment of local anesthesia in surgical procedures in cases of decided contraindications to the employment of general anesthesia. Similar contraindications, in addition to complications of pregnancy, may exist in the parturient. Is not the technic of a life saving procedure worth while mastering, even though it is a bit difficult to perform? It is true that there are many disadvantages in the employment of sacral nerve block anesthesia in spontaneous delivery. The short duration of anesthesia is admittedly one of the greatest; but in operative and manipulative obstetrics, an hour and a half to two hours' anesthesia should be sufficient for almost any of these procedures. We do not advocate the supplanting of general anesthesia by sacral nerve block methods as an anesthetic of choice by any means. The indications and value of the method will be established in the future when obstetricians employ it more generally. The results obtained in surgery indicate that it should also be valuable in obstetrics. Our experiences have shown that sacral nerve block anesthesia has very definite indications in operative obstetrics in the presence of contraindications to general anesthesia, and that its use may even be life saving.

DR. O. S. KREBS, St. Louis: There is a great deal of unjust criticism with regard to scopolamin-morphin semi-narcosis. I think that in many cases any anesthetic, opiate, analgesic or other hypodermic injection given during labor is incorrectly spoken of as "twilight sleep." With regard to scopolamin and hyoscin being identical in action and in chemical formula, I agree. Scopolamin hydrobromid was used by us for a while. During the war we were no longer able to get it, but we were able to get hyoscin hydrobromid and we have used them interchangeably since. The babies have been followed by the pediatric service at the Children's Hospital very carefully. We have instituted a combined service in which the resident pediatrician and one of the members of the obstetric staff examine all the infants in the nursery daily. Any feeding problems that arise are taken care of and the welfare of the infants is generally supervised. It has been particularly noticeable that the men who handle most of the babies in St. Louis pediatric circles are not finding any untoward effects from the scopolamin-morphin seminarcosis. Those who do not see the cases are the ones who speak most loudly against the method. Dr. Haggard spoke of the murderous drug—scopolamin. That is speaking in rather strong terms. I am not here to make a plea for scopolamin. I am merely reporting 3,000 deliveries in Barnes' Hospital in which scopolamin was used 1,572 times, and I submit our mortality statistics. I think they compare favorably with any in this country.

DR. CARL HENRY DAVIS, Milwaukee: I want to second the remarks of Dr. Krebs because, after critically and cautiously using scopolamin in small amounts, for analgesic purposes only, I had only one patient who became excited in 130 cases. I never had a patient who had to be restrained. Dr. Holmes has been unfortunate in the use of this drug. Dr. Haggard's experience has also been unfortunate. Dr. Emil Ries has for years used morphin and scopolamin preliminary to operative work. He uses about half the quantity of ether he would otherwise require. I formerly administered morphin and atropin previous to operation. I now prefer to use morphin and a small amount of scopolamin. It cuts down the amount of ether needed. Relative to asphyxia being charged to the anesthetic, we should speak cautiously because we all know that, whether we give an anesthetic or not, from time to time we shall have a badly asphyxiated baby, owing to birth pres-

sure. The perineal stage of labor is to the baby probably the most dangerous time. As we watch the fetal heart during the second stage we shall find not infrequently that it becomes irregular. Many disregard this danger sign and trust that everything will be all right. Others prefer to do a perineal forceps delivery because they do not know whether there is a prolapsed cord, a cord with a true knot, or some other complication. I have had three true knots in less than 200 cases. We have at present a new gas ethylene. I have used it only twice in normal labor; but, as might be expected from the results reported in abdominal surgery, it does seem to shorten the contractions and to lengthen the interval between contractions. I do not believe that ethylene will replace nitrous oxid as an analgesic during the second stage of labor. We are going to undertake experiments showing whether ethylene can be given in preference to ether for such operations as version, in which we feel that nitrous oxid is contraindicated. It behooves us as physicians to put forth our strongest efforts to make labor less of a burden for the average woman. We should make it as painless as we can, so long as we do not increase the danger to mother and fetus. You and I, in making the effort to make it painless, are going to spend more time with our patients. We are going to watch the fetal heart very carefully. We are going to detect the signs of impending danger. As a result, we are going to have a lowered infant mortality, and the tremendous morbidity that Dr. Newman speaks of will gradually be eliminated.

PERICOLIC MEMBRANES SIMULATING CARCINOMA OF THE COLON *

ARTHUR GOETSCH, M.D.
BROOKLYN

In the past year, we have operated in two cases in which the clinical diagnosis of carcinoma of the ascending colon had been made. At operation, the true condition was found to be partial obstruction due to unusually peculiar vascular adhesions. The reason for our mistakes in diagnosis may be apparent from the following case reports.

REPORT OF CASES

CASE 1.—*History.*—L. A. S., a woman, aged 60, white, American, married, complained of weakness, anemia, loss of weight, constipation and nervousness. She was referred to the surgical service, Dec. 21, 1920, by Dr. William Lintz of the department of medicine. The family and personal history had no essential bearing on the present illness.

About eight weeks before admission, the patient first noticed vertigo on getting up in the morning. Since that time, she had been getting progressively weaker; had noticed that she became fatigued on slight exertion, and had had to spend a good deal of her time resting. In the last four months, there had been a gradual decline in weight, the total loss being 34 pounds (15.5 kg.). The present weight was 150 pounds (68 kg.). Until the onset of the present illness, the bowels have usually been regular, with an occasional slight tendency to constipation. During the last eight weeks, she had noticed an increasing tendency to constipation. Associated with the constipation, there had been general abdominal discomfort with occasional nausea and vomiting. At times, she had had to resort to free use of mineral oil by mouth and enemas to relieve the increasing constipation. There has been a gradually increasing anemia, according to the family physician. The patient had not noticed any hematemesis or any blood in the stools. She had had some belching after meals and had noticed occasional "rolling" of gas in the abdomen.

Examination.—On admission, the temperature was 97.4 F.; pulse, 95; respiration rate, 20. The patient was fairly obese and well developed. She was suffering no apparent present pain or discomfort. The skin was rather loose and flabby. The pupils reacted to light and in accommodation. There was a slight systolic murmur at the apex and also in the pulmonic area. The abdomen was large and well rounded, with a large panniculus. There were no tender areas, and no masses were felt. The white blood count was 9,040; hemoglobin, 80 per cent. Urinalysis revealed nothing abnormal. The Wassermann reaction was negative.

Previous roentgen-ray examination by Dr. A. L. L. Bell revealed a definite constriction in the upper ascending colon, which had caused a marked narrowing of the bowel lumen and distention of the cecum and terminal ileum. The cecum communicated with the upper ascending colon through a narrow "tunnel."

December 22, an exploratory laparotomy was performed.

Operation.—The abdomen was entered through a right rectus incision. The cecum was found covered with fine filmlike membranes. At a level of about 7 cm. above the ileocecal valve, there was a marked constriction of the bowel lumen, causing a definite hour-glass appearance. A band of adhesions ran from within outward and practically encircled

Fig. 1 (Case 1).—Twenty-four hour plate: The lesion was due to a definite vascular band. This illustrates how markedly constricted the lumen of the colon may become without causing complete intestinal obstruction. This is a common observation in carcinoma of the colon. On release of the vascular band causing the lesion, the bowel resumed its normal caliber.

the colon. The adhesions were hyperemic owing to direct communication with the arterial circulation of the colon by means of definite independent blood vessels. The lumen was narrowed to about 2 cm. by these formations. There was nothing to account satisfactorily for this rather unusual picture. The appendix, pelvic organs and other viscera appeared quite normal. On incision of the membranous adhesions in the long axis of the colon, the circulation being controlled with clamps, the colon was easily made to resume its natural shape and the bowel lumen was widened to its normal caliber. The abdomen was closed in layers without drainage.

CASE 2.—*History.*—B. B., a woman, aged 42, Jewish, married, admitted to the medical service, Sept. 26, 1921, complained of epigastric distress, dizziness, constipation, loss of weight, loss of appetite and nervousness. The family and personal history was unimportant. She had always been irregular in eating habits and was given to indiscretions as to both quality of food and time of eating. Three years previously, she was placed on a diet consisting mainly of eggs and milk, for reasons not known to her. The history by systems had no apparent bearing on the present condition.

* Read before the Clinical Society of the Long Island College Hospital, Feb. 1, 1922.

The onset of the present illness was indefinite, approximately two and a half years previously. Since that time, she has complained of occasional attacks of epigastric distress and a sense of fulness. During these attacks, she frequently felt dizzy and faint. Occasional tingling and numbness in the fingers and legs were noted. During the year before admission, she had been more or less obstinately constipated, the bowels not moving for two or three days except by catharsis. Constipation has been progressive and increasingly difficult to relieve, vigorous catharsis—castor oil, salts, etc.—being necessary at times. About nine months previously, the patient had an attack of diarrhea lasting about three days. She had frequently noticed mucus but never any blood in the stools. The appetite had decreased steadily during the last year, and there had been a loss of 52 pounds (23.6 kg.) in weight.

Examination.—The admission temperature was 98.6 F.; pulse, 64; respiration rate, 20. The skin was loose over the body and the patient showed evidence of considerable loss of weight. The mucous membranes were pale. The eyes reacted to light and in accommodation. The tongue was slightly coated. A soft systolic murmur at the mitral area was poorly transmitted. The blood pressure was 140 systolic; 88 diastolic. The abdomen showed a rather thick panniculus. The abdominal walls were loose and atonic. There were no areas of tenderness or palpable masses. The blood examinations revealed an anemia, the red blood cells averaging about 3,150,000, and the white blood cells, 8,000. The hemoglobin was as low as 55 per cent. on one occasion. The urinalysis and Wassermann test were negative. The gastric analysis was not indicative of ulcer or carcinoma of the stomach. The stool gave a positive benzidin reaction but a negative guaiac.

Roentgen-Ray Examination (Dr. A. L. L. Bell).—The upper gastro-intestinal tract was negative. There was a filling defect in the distal portion of the ascending colon, which was constant and was obtained on all plates. The colon enema revealed partial fixation in the upper ascending colon with a markedly distended cecum. Diagnosis was: chronic obstruction of the upper ascending colon.

October 18, the patient was transferred from the medical service to the surgical service by Dr. A. F. R. Andresen.

Operation.—October 19, an exploratory laparotomy was performed. A right rectus incision was made, with a view to determining the nature and extent of a probable carcinomatous stenosis of the upper ascending colon. The cecum and ascending colon were found enormously dilated, as indicated by roentgen ray. Just below the hepatic flexure, there was a definite band of highly vascular, dense membranes, commencing laterally, encircling the bowel and fusing with the omentum. These membranes were contracted, and hence had caused the lumen to be definitely constricted, possibly to a diameter of 1 or 2 cm. On either side of this dense band, there were numerous smaller and less dense films. All these new formations were divided, and numerous bleeding points were secured. When the dense vascular band just referred to was divided, bleeding was quite as brisk as though definite mesenteric branches had been cut, showing the abnormal extent of the vascularity. Following division of the bands, the bowel lumen ballooned up to its normal configuration and size. Further exploration showed a negative abdomen. There was nothing to indicate that the appendix, gallbladder, duodenum or any other viscera had ever been so diseased as to present a possible etiologic factor in the production of these rather unusual vascular bands. The cecum contained a definite mesentery and was of the mobile type, but was not otherwise remarkable. The appendix was well away from the field of operation and there was nothing, regional or otherwise, to account for the constricting membranes. The abdomen was closed without drainage.

COMMENT

These cases are interesting in that both clinically and by roentgen-ray examination, they presented clinical syndromes similar to those of carcinoma of the colon. In the first place, both cases were in elderly women. The history of progressive constipation with increasing necessity for cathartics is the usual complaint of the patient suffering from carcinoma of the colon. The vague abdominal pains and discomfort are common complaints in the carcinoma case with partial obstruction. In a series of cases of obstruction of the colon due to carcinoma, we have found progressive anemia common. In Case 2, the hemoglobin on one occasion was as low as 55 per cent., which is even lower than that observed in any of our cases of carcinoma of the colon.

The great loss of weight in both cases was indicative of a serious nutritional disturbance and could well have been caused by carcinoma of the colon. The anemia evidently was not due to frank hemorrhage, as there was no history of hemorrhages from the bowel in either case. This finding is not uncommon with carcinoma. In the majority of our carcinoma cases, we were not able to get a history of blood in the

Fig. 2 (Case 2).—Barium enema (after evacuation): The plate was taken after first evacuation of the bowels following the enema. The enormous dilatation and hypertrophy of the colon proximal to the lesion may be noticed. This finding is very common in carcinoma of the colon with partial obstruction. This case, like the first, also shows to what proportions the lumen of the colon may be reduced without causing complete intestinal obstruction.

stools, which is not surprising when one realizes that pathologically the lesion is usually scirrhous in character, and the fibrosis prevents frank hemorrhage. Anemia and resultant neuromuscular symptoms of dizziness, faintness, tingling and occasional headache may possibly have been due to stasis, with absorption and intoxication such as one finds so general in patients suffering from carcinoma of the colon. The temperature and pulse findings, respiration and normal leukocyte counts are not unlike the findings of carcinoma without acute abdominal symptoms. In our series of carcinoma cases we have been impressed with the practically normal findings in these particulars, that is, before complete obstruction and serious complications have arisen. Finally, the roentgen-ray diagnosis of obstruction below the hepatic flexure, with marked dilatation and retention in the cecum and ascending colon, fits very well into the conception of malignancy of the colon. (Compare especially Fig. 2.)

In reference to a possible cause for these unusual formations, we may say that, in general, an etiology of adhesions is quite apparent, particularly at operation, in the majority of instances. Ordinarily, one considers peritoneal adhesions as the result of peritoneal inflammation or definite trauma. The cause may be mechanical, toxic or the result of bacterial or other influences in neighboring viscera.

The peculiar membranes present in our two cases could not be explained on ordinary grounds. A consideration of embryologic malformations might offer an explanation. For a complete presentation, reference should be made to the excellent monograph by Harvey.[1]

Riedel first called attention to the fact that omental, appendical, colonic and ileac membranes occurring from primary developmental errors might cause colicky pain and other symptoms of partial obstruction. He suggested that such membranes might be due to dragging of the colon on the mesentery, with rupture of the supporting fibers and their accentuation by subsequent repair. Lane, in 1905, discussed the presence of membranes about the cecum and ileum—the so-called Lane "kinks"—and their significance in chronic intestinal stasis, and conceived the idea that these structures arose in response to the erect posture.

Jackson, in 1908, described a case of chronic appendicitis with a veillike membrane over the ascending colon, and since then the observation of the so-called Jackson's membrane has become common.

Some observers assume that both the Jackson membrane and the Lane band are congenital structures.

Toldt and others have shown that the omentum, at about the sixth month of fetal life, may extend as far down as the cecum. The normal extent of the omentum on the right is approximately to the hepatic flexure provided the omentum has involuted properly. In rare instances, an omental process may extend well over and down the ascending colon and may even fuse with the right parietocolic peritoneum; and it is thought by some that the persistence of the omental process and its fusion with the parietal peritoneum accounts for the so-called Jackson membranes and kindred abnormalities. Through failure of the omental process to keep pace with the descent and growth of the colon, angulation and kinking may occur, with resultant bands and adhesions.

One explanation of the formation of abnormal membranes over the ascending colon is based on the idea that in some instances the colon is prematurely fixed and continues to grow and burrow under the peritoneum, dragging it downward, with resultant formation of membranous folds.

It is believed that the unusual vascular bands described in the accompanying case reports were due to developmental defects that were capable, in themselves, of causing partial obstruction, with the clinical picture of carcinoma of the colon.

Both patients have been under periodic observation. They have regained their normal weight and are generally free from their preoperative complaints.

1. Harvey, S. C.: Congenital Variations in the Peritoneal Relations of the Ascending Colon, Caecum, Appendix and Terminal Ileum, Ann. Surg. (June) 1918.

Rest the Restorer.—Experience will prove to any one that, except in cases of acute disease and very ill patients, there is no appetizer for the consumptive like rest; there is no restorer of aching, tired limbs like rest; there is no fever-reducer like rest.—A. K. Krause: Rest and Other Things, p. 15.

Clinical Notes, Suggestions, and New Instruments

A NEW OPERATION TABLE, DESIGNED TO AVOID ALL LIFTING OF THE PATIENT

JOHN COOKE HIRST, M.D., AND W. W. VAN DOLSEN, M.D., PHILADELPHIA

One of the great faults in technic of all operating rooms has been the necessity of lifting a patient from the bed to the ward carriage, thence to the operating table, thence back to the carriage, and back to bed again. This involves an entirely needless amount of work and energy on the part of the operating room personnel, and, besides, is deleterious to both the patient and the nurses, on whom most of the burden falls. It is always desirable to avoid unnecessary disturbance of the patient before and after any operation, but especially after such operations as bone plating, fracture, upper abdominal surgery, and any operation requiring drainage.

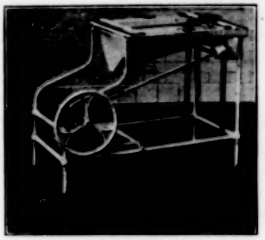

Fig. 1.—Table frame without top; the top is on the trolley frame, on which the patient is brought to the etherizing room.

All this cumbersome method of repeated lifting is necessitated by every form of operating table in use today. These methods have in no way changed since the beginning of operating room technic, and we felt that such medieval methods should not prevail in the otherwise up-to-date modern operating room.

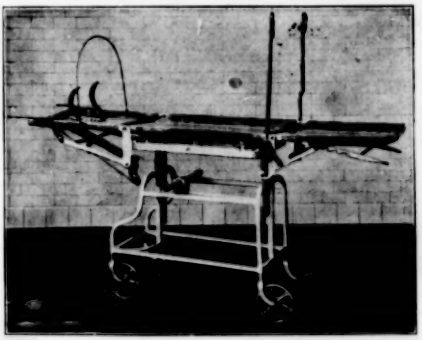

Fig. 2.—Adjustable trolley, on which rests the table top.

After having experimented with various means of moving the unconscious patient from the carriage to the table, some of our experiments having taken us into the realm of cranes and derricks and other engineering paraphernalia, we at last hit on what seemed to us the simpler and more practical solution of making the operating table top removable and have it serve alternately as the top of the carriage and the top of the table. To do this, we placed on the central section of the table our operating table controls, such as the ability to move the table into the Trendelenburg position.

Having made the operating table top removable, on its under surface we affixed two tracks an equal distance apart, both tracks fitted with flanges at each end of the central section of the under side of the table top. These slides or tracks engage with corresponding slides or tracks affixed to the central section of the operating table. The central section of the carriage frame is also fitted with the same type of track; thus, when the ward carriage is placed alongside

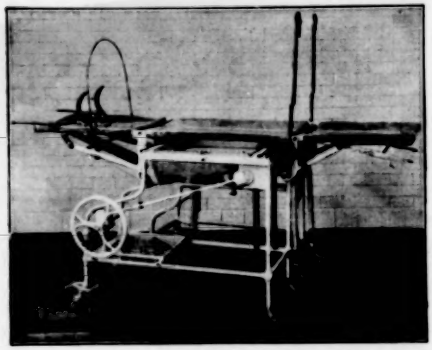

Fig. 3.—Trolley and table frames locked together, and the top in process of sliding from the trolley to the table frame; it is shown half way across.

the table frame, the four sections of tracks come into apposition. By an interlocking device consisting of a pin on the table frame and a grooved arm on the frame of the carriage, the carriage is held immovably against the table frame. When a small lever is depressed, a spring is tensed, thereby releasing a catch which holds the table top in position on the carriage frame.

By a slight physical exertion (an exertion within the capabilities of a child), a patient of 150 pounds or more lying on the operating table top can be moved over the tracks from the carriage frame to the table frame, where the table top automatically locks. The transfer may be made from either side of the table. The interlocking device between the table and the end of the carriage is then released, and the ward carriage is wheeled to one side until ready for the return of the patient, when the procedure is reversed.

The table top is in no way hampered from being placed in any position which may be obtained with the ordinary table used at the present time. A further advantage is that if it is desired to perform certain types of operative procedure, such as a dilation and curettement or plastic operation, the patient's feet may be placed in stirrups and the patient properly draped, scrubbed or otherwise prepared and brought directly from the anesthetizing room into the operating room, thus conserving the time and energy of the surgeon on a busy operating day.

The ward carriage has been made adjustable as to height, so that there is no need of even lifting a patient from the carriage back to her own bed. The top of the ward carriage can be lowered level with the bed—by a system of worm gears at each end of the frame—and the patient can be drawn into bed by a blanket or sheet with a minimum of exertion on the nurses' part and a minimum of disturbance to the patient. The value of this feature in handling a shocked patient can easily be appreciated.

The accompanying illustrations reveal the method of handling the table more clearly than any written description can be expected to do. We feel that in this table we have attained the following results:

We have lessened the shock to our patient by increasing the ease of movement, and we have eliminated her being carried in the arms of nurses who are physically unequal to the strain, or in the arms of orderlies.

We have obviated the possibility of injury to the patient through being dropped on the floor or of sustaining a fractured arm through her arm striking between the edge of the table and the bodies of the persons carrying her. All rough handling has been eliminated.

Because of the device locking the carriage and the table together while the patient is being transferred, and because the top automatically locks in position on both the carriage and the table frames, it is utterly impossible for the patient to drop to the floor on either side of the frames.

To save waiting for the return of the carriage from the ward, it is advisable to have a second carriage and top on which a second patient can be arranged and anesthetized while the first operation is completed and the patient returned to bed. This obviates all delay in the sequence of patients, and is a necessity in busy clinics.

Those whose work lies in the operating room are only too familiar with the injuries of nurses on whom most of the handling of the patients themselves devolves, injuries including strains, rupture and backward displacement of the uterus, which are entirely avoided by the device here described.

We feel that this table is a distinct advance over any previously existing model, and that the advantage of lack of strain to patient and personnel should entitle it to consideration.

1823 Pine Street—1923 Spruce Street.

FOUR OPEN SAFETY-PINS IN THE ESOPHAGUS

CHEVALIER JACKSON, M.D., Sc.D., PHILADELPHIA

The problems of the quick and safe peroral, esophagoscopic removal of a safety-pin in the esophagus have been well worked out and established on a sound basis. The case here reported, however, presented heretofore unrecorded difficulties:

Fig. 1.—Four large, stiff, interlocked safety-pins impacted in the esophagus of a child, aged 9 months.

REPORT OF CASE

A boy, aged 9 months, was referred to Drs. Cornelius Coakley and W. F. Cunningham, with the history that on admission to the Southampton Hospital for a phimosis opera-

tion an open safety-pin had been found in the stools by the nurse. The mother stated that an older child had put a safety-pin in the patient's mouth. Roentgen-ray examination was promptly made for other safety-pins, and four, all open and all of a very large size, were found lodged in the esophagus (Figs. 1 and 2). They had probably been present for nearly two months.

Fig. 2.—Safety-pins, actual size, reassembled in the interlocked position. The wool came with the first pin removed.

Esophagoscopy revealed that the pins were interlocked so that when the point of one was brought into the esophagoscopic tube-mouth, traction could not safely be made because all the pins were dragged on, which would have caused the other three points to perforate. With the help of Dr. Willis F. Manges, it was discovered that the Gordian knot could be untied (not cut) by disentangling the two lower pins downward, one at a time. These two smaller pins were carefully guided under direct vision into the stomach, with the gastroscope. The two remaining very large and very stiff pins were removed through the mouth by the esophagoscopic, point-protected method of the author, the Tucker forceps being employed.

It was intended to remove the other two pins from the stomach through the mouth, with the gastroscope at a subsequent sitting, but an unusually large pylorus permitted them to pass into the intestinal tract, and they passed out safely with the stools.

The patient was discharged cured.

Fig. 3.—Prone position, preference for which has been frequently noted as a symptom of foreign body in the esophagus.

COMMENT

Apart from the mechanical problem of the interlocked pins, the case is interesting as beautifully illustrating a heretofore unrecorded symptom of esophageal foreign body in children first noted by Miss Frances Grove, R.N., and since so often seen at the Bronchoscopic Clinic in other cases as to preclude mere coincidence. The symptom consists in the preference for lying in the prone position (Fig. 3). After the pins were out, the child preferred the dorsal position (Fig. 4).

As a matter of prophylaxis, safety pins should be kept out of the reach of children, and parents and nurses should not set a bad example by holding pins in their own mouths while dressing children.

Fig. 4.—Child after the pins were out: dorsal decubitus preferred.

128 South Tenth Street.

A SIMPLE, INEXPENSIVE POWER UNIT FOR ELECTRICALLY LIGHTED SURGICAL INSTRUMENTS

Arthur D. Gray, Topeka, Kan.

That most of the transformers and current controllers designed for use with electrosurgical instruments have some unsatisfactory features is a fact well known to every one who has occasion to use them. Most of these appliances, constructed on the resistance principle, are subject to fluctuations in the main power line, which are proportionately reflected in the instrument circuit and often result in the

Fig. 1.—Parts required to make the unit: *R*, an ordinary radio rheostat; *D*, hard rubber or composition radio dial; *B*, "pigtail" battery connections; *C*, radio binding-post clips; *P*, thin panel of hard rubber or composition; wood or thick cardboard may be substituted if desired.

burning out of a lamp. On a wet operating room floor they may "ground," to the extreme discomfort of the patient and the annoyance of the surgeon.

Although I designed the apparatus described here for use primarily with urologic instruments, it serves equally well for any of the small diagnostic lamps. It is made up from ordinary dry batteries and stock radio parts that can be purchased anywhere.

After the rheostat has been mounted on the panel, the latter is fastened to the dry cells with strips of adhesive tape, which also serve to hold the batteries together.

The various parts of the apparatus are assembled as shown in Figure 2, and no tools are necessary, with the exception of a screw-driver.

Although two cells are adequate for most purposes, a few foreign-made instruments, such as the Koehler modification of the Bruening bronchoscope, require three or four.

Fig. 2.—Unit assembled; the small binding-post clips are especially well adapted to holding the cord tips.

ADVANTAGES

This apparatus is an inexpensive, portable unit adaptable to bedside use or in localities not supplied with commercial electric service.

The current fed to the instrument is delicately and accurately controlled.

It is simple, and is easily constructed from stock material obtainable almost anywhere.

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Reflex Phenomena Due to Irritation of Sympathetic Nerves.—The vagus, glossopharyngeal and sympathetic nerves form the pharyngeal plexus, which is closely related to the tonsils and vessels which form Waldeyer's lymphatic ring. The reflex phenomena which are present in adenoids are probably due to irritation of the nerves forming the plexus. Moreover, it has recently been shown that infection from the appendix produces lymphangitis in the plexus of lymph vessels surrounding the solar nerve plexus, and induces various reflex phenomena.—C. F. Sonntag: *Proc. Roy. Soc. Med.* **16**:9 (Aug.) 1923.

MITRAL STENOSIS AS REVEALED BY THE ROENTGENOGRAM AND THE ELECTROCARDIOGRAM

LOUIS FAUGERES BISHOP, M.D., NEW YORK

The roentgenogram of the heart, taken with the tube 6 feet behind the chest, shows the left border so straight that it is almost like a line drawn with a ruler. This straight sided

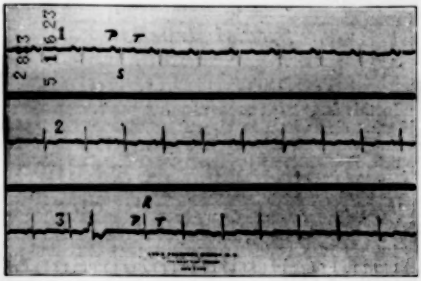

Fig. 1.—Electrocardiogram showing the downward S wave in the first lead and the upward R wave in the third lead, proving right predominance in a case of mitral stenosis.

heart is due, of course, to the relatively poor development of the ventricle and the large auricle. It is very typical of mitral stenosis.

The electrocardiogram shows a right predominance. The primary activity of the ventricle is down in the first lead

Fig. 2.—Orthodiagram in a case of mitral stenosis, showing the characteristic straight left border of the heart.

and up in the third. The wave representing the auricle is atypical in shape, consisting of two summits instead of one.

This particular person had a loud presystolic murmur, but many times the murmur is obscure, and findings such as these make the diagnosis of mitral stenosis easy.

Any one who has lived in the pretechnical days of cardiology can recall the acrimonious controversy that arose as to the existence or nonexistence of mitral stenosis in some special person who sought the opinion of several physicians. With the roentgen ray and the electrocardiograph, it is now possible to settle definitely this question.

109 East Sixty-First Street.

Special Articles

VACCINATION IN JAPAN

In this issue of THE JOURNAL appear two articles[1] of great significance in respect to the control of smallpox. Jenner announced, 127 years ago, the discovery which, if effectively applied, would have unquestionably abolished this disease from the face of the earth. That this statement is not too strong is supported by the results obtained by vaccination in various civilized countries. As a simple example, we may cite the experience of Germany, where in the early years of the nineteenth century, sometimes 40,000 deaths occurred in a year from smallpox. The disease was brought under complete control by vaccination, and reappeared, in a few localities, only under disturbed conditions due to the World War. The opponents of this well-established scientific method of prophylaxis are wont to support their arguments by reference to the statistics of such far-off countries as the Philippines and Japan, not taking into account the fact that the Philippines, prior to American occupation, had 40,000 deaths a year from smallpox; that adequate control succeeded in eliminating gradually the number of cases of the disease, and that only carelessness in the vaccination of the new-born permitted the conflagration of smallpox in 1918, which resulted in more than 50,000 deaths. Actually, this experience in the Philippines is an excellent argument for vaccination. It is only misinterpretation that permits the Philippine record to be used by antivaccinationists.

Fig. 1.—POSTER USED IN VACCINATION CAMPAIGN IN 1850.

Translation of the first poem on the right: Who ever called him the "God" of smallpox—
The incarnation of a demon accursed?

Translation of the second poem on the left: Blessed be (the vaccine) that relieves the parent from anxiety and brings to the happy babe the fruit of long life.

The writing in the picture is an account of the introduction of vaccine from Holland into Japan. It advises every parent who has a child to ignore his superstition and accept the treatment which will bring happiness to the family. The picture represents a child being tormented by the Demon of smallpox. A healthy vaccinated child is riding to his rescue on the cow which gave the vaccine.

It is interesting, in this connection, to read the history of vaccination in Japan, recently presented to the Royal Society of Medicine.[2] It was written by Professor Miyajima of the Kitasato Institute in Tokio, and read to the society by Sir George Buchanan of the Ministry of Health. According to Professor Miyajima in 1820 a Dutch scientist, Siebold, brought some vaccine lymph from Java to Nagasaki. The

1. Heiser, V. G.: Menace of the Unvaccinated, this issue, p. 1070. Leake, J. P., and Force, J. N.: Smallpox and Vaccination, this issue, p. 1072.

2. Miyajima, M.: History of Vaccination in Japan, Proc. Royal Soc. Med. 16:23 (Sept.) 1923.

people were ignorant, however, and refused to give it a trial. Twenty years later a description of Jenner's method appeared in Japanese literature and numerous attempts were made at vaccination. Most of these failed, because the vaccine lost its potency during the long voyage to Japan. Between 1845 and 1850 a feudal lord named Nabeshima Kanso became an enthusiastic supporter of vaccination and, through the agency of his court physician, many persons were vaccinated successfully. A pamphlet was prepared by this physician at the request of Lord Nabeshima Kanso and widely distributed. It was called "A Brief Account of Calf Vaccine." The movement spread to various provinces, and within a few years vaccination became a general practice in many parts of the country. However, in Japan and elsewhere, the established school of practitioners, who at that time followed the teaching of the ancient Chinese schools of medicine, objected to the introduction of vaccination, and their objections were so successful that in 1848 a decree was issued prohibiting the translation and publication of all medical and scientific works in the Dutch language. At that time the Dutch language was the only medium through which Western knowledge reached Japan. However, vaccination had already proved its virtues sufficiently to permit the government to urge vaccination regardless of its edict against Western science. In fact, Professor Miyajima gives the efficiency of vaccination the credit for mitigating the severity of measures against Western learning.

In this connection, it is interesting to observe how, even at that period, seventy-five years ago, pictures and text were used to urge this health measure upon the public. The accompanying illustration is a poster, published and distributed by Kuwada Rissai, a vaccinator in Yeddo.

From 1850 on, many clinics were established in which vaccination was practiced. One of these, established at Yeddo in 1859, was brought under government control as a central vaccination institution in 1860 and later became the chief educational institute for the study of Western scientific medicine. Eventually, it resulted in the present medical faculty of the Imperial University of Tokyo. In 1875 regulations were passed making compulsory the vaccination of all new-born babies and revaccination between 5 and 7 years of age. In 1896 the central government undertook the manufacture of vaccine, with the result that the two institutions created for this purpose became centers of medical research. How efficient vaccination has been in Japan is evidenced by the words of Professor Miyajima:

> The widespread employment of vaccination in Japan has brought about a great diminution in the prevalence and severity of smallpox. History tells us that during ten centuries prior to the introduction of vaccination there were sixty-five great epidemics of smallpox and that five emperors died from it. There have been epidemics since vaccination was begun, particularly between 1886-1891 and in 1896-1897, but they have been less frequent and less severe; and it has been possible, especially in recent years, to bring them quickly under control by measures for compulsory vaccination. This was exemplified in 1907, when the importation of smallpox into Kobe seemed likely to lead to an epidemic comparable in severity with the epidemics of prevaccination days. I must add, however, that despite the existence for many years of a compulsory vaccination law in Japan, the people in general are still very neglectful of the measure, and it is easy to find among the poorer classes many unvaccinated children. For this reason, as well as because Japan is situated near countries where smallpox epidemics are frequent, it is highly important for us to enforce the law relating to compulsory vaccination as strictly as possible.

THE INFLUENCE OF HEREDITY ON THE OCCURRENCE OF CANCER

H. GIDEON WELLS, M.D.
CHICAGO

Concluded from page 1021

B. *ANIMAL EXPERIMENTATION*

TRANSPLANTED TUMORS

In the period of active investigation of transplantable tumors in animals that followed the demonstration by Leo Loeb and by Jensen that series inoculation of rat and mouse tumors is readily carried out, there was naturally not a little study of the influence of heredity on the inoculated tumors. At this time it was not so fully appreciated as it now is that an inoculated tumor is something quite different from a spontaneous tumor. A transplanted tumor differs from a spontaneous tumor fundamentally in that it is never a growth of the cells of the inoculated animal, but it is a growth of the cells descended from the mouse that furnished the original spontaneous tumor from which the transplanted growth was obtained. For example, a mouse inoculated with a strain of the Jensen carcinoma, which has been carried through myriads of generations of transplants during the twenty and more years since Jensen first started the transplantation, is growing a tumor composed of cells derived from Jensen's original tumor mouse and not from its own tissues. The mouse bearing an engrafted tumor is merely furnishing the soil on which some grafted tissue is growing, exactly as a culture tube furnishes a soil on which bacteria are growing.

That the inoculated cancer is fundamentally different from the spontaneous cancer is shown by the fact that successfully inoculated growths often disappear spontaneously, and that protection may be furnished by various procedures of immunization, phenomena which are never seen in spontaneous tumors. Furthermore, animals that are immune to tumor inoculation may develop spontaneous tumors,[40] and by painting the skin with tar, true carcinomas may be produced in mice immune to grafts of the same sort of tumors.[41]

Therefore observations on the influence of heredity on the susceptibility of animals to transplanted tumors can have no direct bearing on the question of susceptibility to spontaneous tumors, since the resistance to one bears no direct relation to the resistance against the other. The chief things of interest learned from the inoculated tumors in respect to heredity are the following:

1. Close relationship of animals is favorable for inoculation. An animal inoculated with its own spontaneous tumor is more likely to develop growths from the inoculation than any other animal of the same species;[42] its close relatives are more likely to give positive results than unrelated mice, and the likelihood of successful inoculation becomes more and more remote, the more

40. Thorel: Verhandl. d. deutsch. path. Gesellsch. **12**: 60, 1908. Clunet: Recherches expérimentales sur tumeurs malignes, Paris, 1910, p. 24. Bashford, E. F.: Fourth Sc. Rep. Imp. Cancer Res. Fund, 1911, p. 19.
41. Fibiger: Act. chir. scand. **55**: 343, 1922.
42. Loeb and Leopold: J. M. Res. **17**: 299, 1908.

different in origin and in character the inoculated mice are from the originator of the tumor. Growing a transplantable tumor for several generations in a particular strain of animals may enhance its virulence for that particular strain of animals and not for others. These and other related facts indicate that even with transplantable tumors there are differences in susceptibility that are connected with the heredity of the animals, a point recognized in the pioneer investigations of Morau.[43]

2. Certain strains of animals are insusceptible to tumor grafts to which other strains of the same species are susceptible. This has been frequently observed, and the differences in susceptibility may be either absolute or only quantitative. For example, Haaland[44] found that a certain tumor grew in nearly 100 per cent. of Berlin mice, in 24 per cent. of Hamburg mice, and was practically innocuous to Christiania mice. Again, Loeb has described a tumor originating in a Japanese waltzing mouse, which grew in nearly 100 per cent. of this sort of mice but not at all in common laboratory mice. Many other similar instances have been reported.

3. Heredity influences in a constant manner the susceptibility of a given strain of animals to inoculation with cancer. For example, Tyzzer[45] studied a carcinoma which arose in a Japanese waltzing mouse and which could be inoculated into mice of the same type with a large percentage of success, but which did not grow in certain "common" strains of mice. When Japanese waltzers were bred with these common mice the mice of the first hybrid generation were all susceptible, but the second and third hybrid generations made by cross breeding the first generation hybrids were insusceptible. The mice of the first hybrid generation, although susceptible to tumor inoculation, did not show the waltzing character of the susceptible parent strain, whereas the waltzing mice (recessives) that appeared in the second and third hybrid generation were not susceptible to inoculation with the dancing mouse tumor. Further studies carried out with numerous back crosses gave results that indicate that susceptibility to *grafted* tumors is not inherited as a single mendelizing factor, for they do not furnish a ratio characteristic of a single factor inheritance. Tyzzer and Little believe that both susceptibility and nonsusceptibility are inherited as a complex of mendelizing factors, perhaps as many as twelve or fourteen in number.[46] Susceptibility to this tumor might seem to be a dominant character, since it appears in the first hybrid generation; but its failure to appear in the subsequent hybrid generations does not conform with the behavior of a dominant unit character.

Loeb and Fleisher[47] have experimented with crosses of strains of domestic mice with differing susceptibility to transplantable cancer and obtained results not altogether in agreement with those of Tyzzer. For example, in the first hybrid generation the susceptibility to inoculation was intermediate between that of the two ancestors, and not as high as in the more susceptible. The second and third hybrid generations showed very little susceptibility, but in the fourth and fifth generations there was increased susceptibility. They agree with Tyzzer and Little in believing that, if susceptibility to these inoculated tumors is a mendelian process, it must depend on multiple factors. In later experiments,[48] using different strains of animals, they obtained entirely different results, indicating the lack of fixed principles applicable to all transplanted tumors, and all strains of animals. In one strain a pure line was extracted with a susceptibility different from that of the rest of the strain.

In rats also the transplantability of tumors has been observed to be influenced by heredity; but in Roffo's[49] experience this behaved more like a simple mendelian character than in the observation of Tyzzer and Loeb with mice. On the other hand, Morpurgo and Donati[50] were unable to demonstrate that twenty-nine offspring of rats bearing inoculated tumors were more or less susceptible to inoculation than the twenty-eight offspring of rats of the same strains that were immune to inoculation. This again disagrees with the observations of Levin and Sittenfield,[51] who found also in a relatively small number of animals (twenty) that a transplantable rat sarcoma that gave 86 per cent. of takes gave but 25 per cent. in the offspring of immune rats, a figure indicating that resistance to this transplantable tumor behaves as a dominant character. The number of animals used in these two last sets of experiments is so small, however, that the results have little if any value.

SPONTANEOUS ANIMAL TUMORS

Except for the extensive studies of Loeb and Lathrop and of Maud Slye, which will be considered later, most of the evidence as to inheritance of a tendency to spontaneous tumor development in animals is of a somewhat casual nature. However, there are several interesting observations on this point. Perhaps the oldest record of this sort appears in the classical treatise on tumors by Virchow, "Die krankhaften Geschwülste," published in 1864. Here, in discussing the melanosarcomas of horses, Virchow[52] says:

> Brugnone, who first seems to have described this disease of horses, although under the name of hemorrhoids, reported that a white stallion introduced this disease into the animals of a herd in Sardinia, and that his progeny developed melanosarcoma, whether male or female. Gohier has told of a report by Gallety-Latournalle that a young white stallion affected with black growths transmitted this condition to all its white progeny, while all those that were not white remained free. As a result, the disease spread itself over the entire province of Bresse and its vicinity.

Coming to more modern times and experimental methods, in 1898 we find Eberth and Spude[53] describing the occurrence of a family of mice with mammary gland tumors. In 1907, Tyzzer[54] made observations on a number of mice in respect to the occurrence of spontaneous tumors in the offspring of tumorous and nontumorous ancestors; but the breeding was not followed through generations enough to establish any basis for deduction as to how any possible hereditary influences might work. One family of mice (C), descended from a mouse with a papillary cystadenoma of the lung, exhibited three similar tumors among

43. Morau: Arch. med. exper. u. anat. Path. **6**: 677, 1894.
44. Haaland, cited by Tyzzer, E. E.: J. M. Res. **21**: 519, 1909.
45. Tyzzer, E. E.: J. M. Res. **16**: 519, 1909; J. Cancer Res. **1**: 125 (April) 1916.
46. This conclusion has been reinforced by Little in a subsequent communication on the same material (J. Cancer Res. **6**: 106, 1921).
47. Loeb, Leo, and Fleischer, M. S.: Centralbl. f. Bakt. u. Parasitenk. **67**: 135, 1912.
48. Loeb, Leo, and Fleisher, M. S.: J. Cancer Res. **1**: 331 (April) 1916.
49. Roffo, A. H.: Rev. d. Inst. Bact. Buenos Aires **1**: 445, 1918.
50. Morpurgo, B., and Donati, A.: München. med. Wchnschr. **60**: 626, 1913.
51. Levin, I., and Sittenfield, M.: Proc. New York Path. Soc. **10**: 119, 1910.
52. Virchow, Rudolf: Die krankhaften Geschwülste **2**: 241, 1864.
53. Eberth and Spude: Virchows Arch. f. path. Anat. **153**: 60, 1898.
54. Tyzzer, E. E.: J. M. Res. **17**: 199, 1907; **21**: 479, 1909.

twenty-four offspring, none of which lived over fourteen months. Family B, consisting of twenty-nine offspring of a mouse with a lymphoma, produced one lymphoma and one lung tumor, but only seven of these twenty-nine lived to be 1 year of age. Family A continued ninety-eight offspring of a mouse with a lung cystadenoma, of which sixty-five lived more than six months, and of these twenty (32 per cent.) presented tumors, of which seventeen were tumors of the lung.

The conclusion was reached from these observations that they "indicate that one of the factors in the development of tumors is to be found in an inherited character or peculiarity." Still earlier, Leo Loeb[55] had suggested heredity as an explanation of so-called cage epidemics in laboratory animals and the occurrence of "epidemic" conjunctival carcinoma in cattle.

Murray[56] investigated the influence of heredity on the occurrence of spontaneous tumors by breeding together animals descended from cancerous females, or by breeding cancerous females with males descended from cancerous females, and by breeding together the offspring of such matings. Among 340 female mice so obtained, which reached an age of 6 months or over, sixty-nine, or 18.2 per cent., had some form of tumor (sixty-two being of the mammary gland), whereas in 223 females without known tumors in either their mothers or grandmothers, only twenty-three, or 8.6 per cent., had tumors. The value of this study is limited by the fact that the ancestry of these mice is known for such a short distance; but as far as it goes it indicates, says Murray, that:

> Female mice in whose ancestry cancer of the mamma has occurred not farther back than the grandmothers are distinctly more liable to develop the disease spontaneously in this organ than those in whose ancestry cancer is more remote. The increased liability is probably of the nature of a predisposition of one particular tissue or organ system to undergo cancerous transformation under the wear and tear of life. The differences between the two groups are apparent at all ages, and the age of maximum incidence does not appear to have been lowered in the predisposed group. The magnitude of the difference is such that it cannot be accounted for by the chances of random sampling.

In such a method of selection as employed by Murray, however, there exists a fundamental source of error, for selecting merely cancerous and noncancerous *individuals* it was perfectly possible for some of the cancerous mice to have been members of strains or families in which the tumor rate was low, the cancerous individuals having been exceptional members of these strains; equally well, the noncancerous individuals might have been exceptional members of strains or families in which the cancer rate was high. It is of interest to note that among the mice of immediate cancerous ancestry in Murray's experiment were eight cases of lymphoma, all occurring in the descendants of two mice with mammary gland carcinoma. Although there were but four squamous cell carcinomas, three of them occurred in sisters in a single litter. These two last observations, together with those of Tyzzer, suggest that type and location of spontaneous tumors may be influenced by heredity; but the number of cases and character of control does not by any means establish this as a general law.

55. Loeb, Leo: Centralbl. f. Bakteriol., I, Orig. **37**: 236, 1904.
56. Murray, J. A.: Fourth Sc. Rep. Imp. Cancer Res. Fund, 1911, p. 114.

Another item bearing on this subject is given by Creighton,[57] unfortunately without sufficient details, in these words:

> I was enabled, by the kindness of Mr. F. W. Twort, to use a whole series of microscopic specimens from thirty cases of mouse-cancer, female and male, which came all from one or two cages in the following circumstances: A breed had been started two years before in the country as a pastime. Cases of tumor occurred from time to time, of which the animals died, microscopic specimens being made from each of them as they occurred. The fatalities continued, no new blood was introduced, and at length the whole of the mice, males as well as females, died of one kind of cancer or another, so that the family was literally exterminated in the space of two years.

A much more extensive series of observations than any of the foregoing has been reported by Leo Loeb and Abbie Lathrop,[58] based on the existence in the stock of mice bred by Miss Lathrop, for commercial purposes, of strains in which subcutaneous (presumably chiefly mammary gland) tumors were found with almost constant frequency, the rate varying widely in different strains. Only females over 6 months of age were considered. Unfortunately, these tumors were not all examined microscopically, nor was there systematic necropsy investigation of mice in which no external cancer occurred; but it is understood that the figures are based solely on the presence or absence of visible or palpable mammary gland tumors, diagnosed often only by observation of the gross appearances. If so, this fact needs to be kept in mind in analyzing the results, which should be considered as applying exclusively to macroscopically recognizable mammary gland tumors. Just how much of an error this will introduce into the figures is uncertain, and we cannot be sure that the proportion of error will be approximately the same in different series, since it would be possible for one series to have a considerable proportion of internal neoplasms not present in another strain. Loeb is of the opinion, however, that omitted internal tumors could not have been sufficiently numerous to modify their statistics seriously.

The main points developed by Loeb and Lathrop are these: Heredity undoubtedly is an important factor in determining the incidence of cancer, for strains can be established which run an almost constant proportion of subcutaneous cancer for several generations. These rates may be as high as from 58 to 65 per cent. They also found that a certain relationship exists between tumor frequency and tumor age, the latter seeming to be as characteristic for a certain strain as the tumor rate, or perhaps more so. When strains known to differ in their tumor rates were crossed, it was found that the hybrids might show tumor rates corresponding to those of either parent, or intermediate between the rates of the parents. Even when the two parents have a similar rate, the offspring may have a different rate, although in such a hybrid cross the rate is usually similar to that of the parents.

The relations between tumor age and tumor rate, previously mentioned, are interpreted by Loeb and Lathrop as best explained "if we assume that the hereditarily transmitted constitution, so far as it represents the tendency of the organism to develop tumors, depends on the cooperation of multiple factors. These

57. Creighton, Charles: Some Conclusions on Cancer, London, Williams and Norgate, 1920, p. 27.
58. Loeb, Leo; and Lathrop, Abbie: J. Exper. Med. **22**: 646, 713, 1915; **23**: 475 (Oct.) 1918; J. Cancer Res. **4**: 137 (April) 1919; **6**: 197, 1921.

multiple factors determine the intensity in the tendency to tumor development in a certain individual. In general, the greater is this intensity, the earlier do the tumors appear, and the greater is the probability that in related individuals there exists likewise a tendency to the development of tumors. It is furthermore probable that in addition to the general factors determining the intensity toward the development of cancer, there exist factors which determine specifically the tumor age in certain individuals and strains."

A most extensive and carefully controlled investigation on the influence of heredity in the incidence of tumors in mice has been conducted by Maud Slye[59] under the auspices of the Otho S. A. Sprague Memorial Institute. This work has continued for more than twelve years, being the continuation of a study in genetics begun under the direction of Prof. C. O. Whitman, and has been carried out with a stock of mice of known ancestry for many generations. These mice are all the descendants of a limited and carefully selected stock, bred together according to definite plans designed to give evidence as to the influence of heredity on the incidence of spontaneous tumors in mice, and hence including strains of highly cancerous ancestry and strains with ancestry free from cancer. They represent strains in which cancer is very common, strains in which it never occurs, and strains of intermediate character. It must also be emphasized that not one of these mice has been subjected to any artificial influences that might modify its life. In no case is a spontaneous tumor used for inoculation, or operated on, and no mouse born in this laboratory is ever used for any experimental work whatever. From the moment of its birth, every effort is directed to the one object of permitting each mouse to reach a maximum age. Long experience and great care have made it possible to limit to a large extent the epidemic infections that constantly threaten such large colonies of mice under even the best of conditions. Up to the present time more than 40,000 mice have been examined postmortem, and all lesions that might possibly be cancer, or concerning which there was any doubt whatever, have been examined microscopically by Miss Harriet Holmes and myself. For example, every pneumonic lung is sectioned, no matter how obvious the pneumonia, since the inflammatory lesion might possibly conceal a lung tumor. All told, there have been at least 5,000 spontaneous tumors, mostly malignant, observed in this stock; and as all the mice, whether evidently cancerous or not, have been submitted to necropsy, the material is adequate in amount and quality to furnish evidence against which the question of chance or inadequate controls cannot be raised. Were it not that every dead mouse is thus thoroughly investigated, and that the average age at death is, for a mouse community, very high, there would not be nearly so much cancer material.

Out of this work many facts have come and much has been learned concerning the influence of heredity not only on the occurrence of cancer, but also on its behavior. Some of the outstanding results are the following:

1. *Cancer in mice appears in most of the forms seen in man, and in far greater variety than had previously been supposed.* Since most of the mouse tumors that have been studied elsewhere were those observed by animal breeders, and generally in comparatively young mice, almost the only mouse tumors that were known for some time were mammary gland tumors. Only when large numbers of mice were kept to a maximum age, permitted to die a natural death, and then studied carefully by necropsy, did the great variety and abundance of mouse tumors outside the mammary gland became known. Although mammary gland carcinoma is by far the commonest growth, nevertheless not a few other growths are found. Thus, in the first 6,000 mice were 160 with primary tumors of the lung, chiefly papillary adenomas and carcinomas; in the first 10,000 mice there were twenty-eight primary liver tumors, this number having been greatly increased since that time; in 12,000 necropsies, no less than eighty-seven unquestionable sarcomas were found; in 19,000 mice there were twenty-eight cases of tumor of the testis; in 28,000 mice there were seventy-one cases of squamous carcinoma of the skin or mouth, fifteen cases of typical basal cell carcinoma of the head, four squamous cell carcinomas in the stomach, and several others in different locations; in 22,000 mice there were forty-four with ovarian tumors, mostly solid papillary adenomas; in 33,000 mice there were sixteen primary renal and four suprarenal tumors; in 39,000 necropsies were found twenty-two uterine tumors, eleven of which were leiomyomas, and no unquestionable carcinomas. Not a few other tumors have been observed in these mice, which will be reported later. The importance of the demonstration of this abundant variety of tumors in mice lies in the fact that it adds greatly to the existing evidence of a fundamental similarity in neoplastic disease of mice and that in man. Nearly all tumors found behave in much the same way, occur at a corresponding period of life, in response to similar conditions, and present exactly the same histologic structure as similar tumors in man. The chief difference lies in distribution, the mammary gland carcinomas being by far the most frequent, whereas carcinomas of the stomach and uterus are almost unknown in mice, the same being true for nearly all animals except man.

2. *The tendency to develop cancer, or the capacity to resist cancer, is unquestionably influenced by heredity.* Strains have been established in which, among many hundreds of individuals, through as long a period of observation as twenty-five or thirty generations, not a single case of tumor growth has been seen. Also, strains have been established in which the occurrence of cancer is so common that it becomes the sole cause of the natural death of the animals. Since every mouse that dies of anything except senility might possibly have developed cancer had it lived out its maximum possible span of life, it is difficult to secure 100 per cent. cancer strains; yet families have frequently been obtained in which all the deaths for one or more generations have been from cancer, and strains with figures approaching 100 per cent. tumor incidence for several generations have been obtained.

Since cancer is a disease developing late in life, what is transmitted is merely the tendency, or resistance to the tendency, to acquire cancer, never the disease itself. But, of course, it is true of all characters that only the tendency to them is inherited, since in the fertilized ovum which carries the tendency none of the characters in which it is manifested have yet appeared; some of the characters appear in fetal life, some not until after birth.

3. *The resistance to cancer in these mice behaves in breeding, in Slye's experience, like a typical mendelian*

59. A review with full bibliography is given by Slye in the Journal of Cancer Research 7: 107, 1922.

dominant character. The susceptibility to cancer behaves as a mendelian recessive. When a cancer mouse, derived from the crossing of cancer mice is crossed with a mouse free from cancer and derived from ancestors that never have shown cancer for many generations, the *resulting hybrids of the first generation never show cancer.* If such hybrids are bred together or with other hybrids of similar ancestry, cancer will appear in the offspring in mendelian proportions, and strains of (1) pure cancer mice, (2) pure cancer resistant strains, and (3) heterozygous strains can be extracted, exactly as with any other inheritable "unit character." To quote from Slye:

> Cancer and noncancer tendencies segregate out and are transmitted as such. They are therefore unit characters. A specificity of tissue type in specific organs from ancestor to offspring segregates out and is transmitted as such. It is therefore a unit character. Since these things are unit characters, it is possible to manipulate them by selective breeding and thereby to implant them indelibly in any species, *or to eliminate them permanently and completely from any species.* Cancer and noncancer behave like the absence and presence, respectively, of a mechanism fitted to control proliferation and differentiation in regenerative processes; and an animal either has this mechanism or lacks it, no matter to what species he may belong.

This fact has been observed so many times and with such constancy that Slye feels certain that her work establishes her conclusions beyond any doubt. It is, of course, quite to be expected that susceptibility to cancer should be a recessive character; for, if susceptibility were dominant, cancer would be far more prevalent than it is. The usual statement that a deleterious dominant factor eliminates itself by destroying the species in which it occurs does not hold for cancer, since this disease does not usually manifest itself until after the reproductive period is almost or entirely completed.

4. *Not only the incidence of cancer is influenced by heredity, but also its site and its character.* For example, in certain strains, sarcoma is very common; in others it is seen rarely or never. In some strains one seldom sees any form of malignancy except mammary gland cancer. Miss Slye has developed one strain of mice whose inbred and hybrid derivatives have yielded more than a hundred primary liver tumors, although in all the other mice examined postmortem in her laboratory not a single liver tumor has been found, and only two other cases have been reported from the thousands of mice examined in other laboratories. Another strain has yielded a considerable number of tumors of the testis, although not a single case has ever been reported from other laboratories. A similar tendency for other tumors to appear chiefly or exclusively in certain tissues in certain strains has been observed by Slye. It may be recalled that Loeb reports that the tumors of the Lathrop stock are mostly mammary gland carcinomas, whereas Tyzzer [60] had a remarkably high proportion of lung tumors and a low proportion of mammary gland tumors among his cases of spontaneous tumors, and Murray observed lymphomas in a certain strain of mice. Indeed, the difference in location of neoplasms in respect to organs in different species is of itself an hereditary character, for in the cow we find the mammary gland immune, the suprarenal and liver susceptible; in swine, the embryonal adenosarcoma of the kidney is the prevailing tumor; in rats, sarcomas are more numerous than carcinomas; in negroes, uterine leiomyomas seem to be exceptionally common.

5. *Behavior of tumors is influenced by heredity.* This statement is based on the observation that the localization of secondary tumors seems to be determined largely by heredity. Similar types of mammary gland tumors in mice have been found to produce many pulmonary metastases in some strains, and none or few in other strains. Furthermore, the strains in which secondary tumors occur frequently in the lungs are also the strains in which primary pulmonary tumors are common. A similar observation has also been made for the primary and secondary liver tumors. It may be mentioned that Wood [61] has observed in rats that in some strains a transplanted tumor produced many more instances of lung metastasis than in other strains inoculated with the same tumor.

6. *Inbreeding is not, of itself, responsible for an increased susceptibility to cancer.* I make this statement in this way because it has been suggested that Slye's high cancer rates were the result of inbreeding, a statement that is not warranted in the light of any appreciation of the principles of inheritance. Inbreeding merely concentrates existing characters, but does not produce new characters. Therefore, inbreeding of cancer-resistant strains produces cancer-resistant strains, while outbreeding of cancer-susceptible strains with other susceptible strains produced cancer susceptible strains. An inbred strain may produce 100 per cent. of cancer or 0 per cent. of cancer, depending on the character of the strains that are inbred.

While we have no similar material to compare with Slye's, in which the complete ancestry for many generations is known, all animals are permitted to reach a maximum age, and every dead animal for from twenty to thirty-five generations has been submitted to careful postmortem study, yet such study as others have made of the influence of heredity on spontaneous cancer serves to corroborate at least the *fundamental* point—that heredity is a most important factor in determining the absence or occurrence of cancer.

I have previously referred to the evidence produced by Virchow, Tyzzer, Loeb and Murray in respect to spontaneous tumors in animals, which agrees in indicating the importance of heredity in determining the occurrence of cancer, and also to some extent in determining the site and character of the neoplasm. To this list may be added two more recent contributions which bear directly on the latter point.

A Swiss investigator, Stilling, had been carrying on transplantation experiments, using a definite strain of rabbits which he raised himself. During these experiments he found tumors in the uterus of several animals. He waited years until he had accumulated thirteen such animals and carried out a series of inoculation experiments with them. His death interrupted these experiments before he had given more than a few short communications concerning transplantable tumors before a local medical society. A pathologist, Beitzke,[62] examined the records Stilling left behind him and reports the results. Beitzke says:

> He [Stilling] bought almost no rabbits, but raised his own stock, which not only permitted him to control the relation of his experimental animals, but in a certain sense to raise a

60. Tyzzer, E. E.: J. M. Res. **18**: 155, 1908.

61. Wood: J. Cancer Res. **4**: 63, 1919.
62. Beitzke: Virchows Arch. f. path. Anat. **214**: 358, 1913.

whole tumor race. Unfortunately, no mention was found in his records that he had undertaken an exhaustive investigation concerning the influence of heredity.

Stilling attributed his success to the fact that he kept his animals until they were old, the youngest tumor being in a 4 year, the oldest in a 7 year rabbit. He also laid weight on the fact that most of the cases occur in rabbits of the same strain. This contribution is especially valuable because rabbits seldom exhibit spontaneous tumors, for we can find in the literature records of but twenty-eight cases of rabbits with tumor growth, all told,[63] exclusive of the thirteen found by Stilling in one small strain of rabbits. Therefore, the element of chance may be entirely excluded as accounting for the occurrence of Stilling's cases.

Equally true is this of the experience with rat sarcomas in the Crocker Fund Laboratory of Columbia University.[64] Here numerous experiments have been carried out with rats infected with a certain tapeworm, *Taenia crassicollis*, which passes its encysted stage in the liver. In some of the infected rats, sarcomas develop in the liver as a result of the irritation or growth stimulation. It has been found that different strains of rats differ greatly in their tendency to develop sarcomas in response to this common stimulation of the liver tissues, some giving a high percentage and some a low percentage of positive results. At the 1923 meeting of the American Association for Cancer Research, Wood reported that when rats that developed sarcoma were bred together, much higher rates were obtained in the offspring, such families sometimes giving 100 per cent. of positive results.

Another piece of work which may bear on the subject of heredity and tumor formation is that of Stark,[65] on the lethal neoplastic process discovered by Bridges in a fruit fly, *Drosophila melanogaster* (amelophila). This appears in the form of black granules in the bodies of the larvae, affecting males only, although not attacking sex structures, and causing death of all the affected larvae. The growth consists of a solid mass of large cells, producing much pigment which resembles melanin. Unfortunately, we know so little about the pathologic anatomy of insects that it is not possible to prove that these growths are true malignant neoplasms identical with mammalian cancer; but this much is in favor of such a conclusion: (1) the tumors consist of atypical cellular growths; (2) they invariably kill the organism they attack; (3) bacteria cannot be cultivated from them; (4) sterile eggs raised under aseptic conditions may produce larvae exhibiting these growths; (5) the growths may be transplanted into other larvae, and into adult flies; (6) metastases may form consisting of cells identical with those of the original growth; (7) irregular mitotic figures have been noted in rapidly growing tumors, and (8) the tumors develop in embryonic rudiments, destined to develop the adult organs during the pupa stage.

If this growth of the fruit fly larvae is a true tumor, it furnishes a remarkably clear instance of a neoplasm that occurs solely on a basis of heredity which has been worked out conclusively. In the affected strains it is found that one fourth of the larvae die, and these are all males; i. e., one half of all the males die. Therefore, this inherited lethal growth behaves in inheritance as a sex-linked recessive factor.

63. Slye, Maud; Holmes, H. F., and Wells, H. G.: Cancer Res., to be published.
64. Bullock and Curtis: Proc. New York Path. Soc. **20**: 149, 1920.
65. Stark, Mary B.: J. Cancer Res. **3**: 279, 1918; J. Exper. Zool. **27**: 509, 1919.

MECHANISM OF THE HEREDITARY INFLUENCE

In view of all the experimental evidence cited above, and the absence of any experimental evidence that contradicts it, the conclusion seems inevitable that the incidence, character, location and behavior of tumors depend to some extent, at least, on the inherited qualities of the animal and of its tissues. This being granted, the next question is, How does heredity determine susceptibility or resistance to tumor formation?

Apparently this may be answered as follows: Tumor formation is the result of stimulation of the tissues to growth, the stimuli being of various sorts and nonspecific. Some stimuli produce marked proliferative effects in proportion to the retrogressive effects, and such stimuli are particularly capable of leading to neoplastic proliferation, e. g., roentgen rays, coal tar. The same amount of stimulation does not produce equal amounts of proliferative reaction in all individuals, even when of the same species; e. g., negroes are more likely to develop excessive amounts of connective tissue growth (keloids) in response to cutaneous injuries than are white men, and some white men develop more scar tissue than others from similar wounds. Not all roentgen-ray workers develop the same degree of hyperkeratosis from the same amount of exposure, and some develop roentgen-ray cancer much sooner than others. Hence there are individual variations in both amount and character of proliferative reaction to a common stimulus, and these variations undoubtedly rest on an hereditary basis, in part if not wholly.

Evidently, then, heredity may determine whether the proliferative reaction that follows injury assumes a neoplastic character or not, just as the Crocker Laboratory rats do or do not develop sarcoma in the liver tissues about the encysted tenia, according to their ancestry. This has been pointed out especially in connection with the study of the lung tumors in Slye's mice, which show that mice with cancer heredity react to nonspecific inflammatory conditions in the lungs more often with excessive proliferation which leads to malignancy than do mice of noncancerous ancestry. All mice of tumor age have suffered more or less from inflammatory conditions in the lungs, with proliferative reactions. In some of the mice of cancer ancestry, but only in about 10 per cent. of those involved in this study, the proliferation assumed a definitely neoplastic character. On the other hand, mice not of cancer ancestry subjected to corresponding lung injury very rarely, if ever, reacted with proliferation to a degree even suggesting tumor formation. Nor is this all of the story. Since this study was made, we have learned more of organ specificity in cancer heredity, and we now know that if certain strains are selected it is possible to secure a breed of mice nearly all of which develop lung tumors, and others which never develop lung tumors in response to exactly similar conditions of lung injury.

A nicely comparable instance is cited by Bateson,[66] who, speaking on observations on inherited deformities of the feet in chickens says: "When the incubators are not running uniformly, many of the chickens are born with deformed feet. Such abnormality, however, is found with especial frequency in particular strains of

66. Bateson: Lancet **2**: 453 (Aug. 16) 1913.

birds, though eggs from other strains exposed to the same conditions may give perfectly normal results. The *liability* is the thing transmitted, but without the appropriate conditions the effect is not produced." That is to say, it is not the characters themselves that are inherited but the tendency to develop them. For example, we have the following example from plant genetics: Red and white primroses breed true;[67] but if red primroses are raised in a greenhouse at from 30 to 35 C., the blossoms are all white and in appearance they differ not at all from white primroses. If after many generations of growing white flowers they are transplanted outdoors, they again breed red blossoms as before. Therefore, the red primrose cannot be said, when growing in hothouses, to transmit redness, but only the capacity to react to a certain environment by producing red pigment.

A striking illustration of what seems to be an example of another disease in mice that behaves exactly as if determined by a mendelian unit factor has been furnished by Hagedoorn-La Brand.[68] A breeding experiment was under way in which a colony of mice, composed of Japanese mice, large albinos, and hybrids of these two, was under observation. This colony was attacked by an epidemic staphylococcus infection, which killed all the Japanese mice but attacked none of the albinos, although the latter often ate the dead infected Japanese mice. No animals attacked by the infection recovered. *In the first hybrid generation, no mice died*, although quite as much exposed as the others, thus indicating that the resistance of the albinos depended on a single dominant genetic factor. This was further corroborated by the observation in the other generations of hybrid crossings. In the second hybrid (F 2) generation, of 125 animals ninety-one lived and thirty-four died, the theoretical expectation on the foregoing assumption being 93.75 to 31.25. Of crosses between F 1 and Japanese, of fifty-seven animals twenty-five lived and thirty-two died (theory, 28.5 to 28.5). Of crosses between F 1 and albinos, of fifty-one only one died (theory, no deaths). These results correspond remarkably well with the assumption that the albino mice possess one gene, the presence of which protects them against death from this infection, and which is lacking in the Japanese mice.

Presumably related to this sort of inheritable predisposition to an infectious disease is the inheritable deficiency in complement observed by Moore.[69] This deficiency is associated with a lack of resistance to infection, and it behaves as a simple mendelian recessive, hybrids of the first generation having as active complement as that of the normal parent.[70]

In Slye's experience, the hereditary factor of resistance to cancer may become so high in pure strains of selected mice that no ordinary amount of proliferative stimulus ever overcomes it, for strains of cancer-resisting mice have been developed which have never shown cancer during at least thirty generations, which would correspond in human life to close on a thousand years. Conversely, the capacity to resist cancer may be so effectively bred out of mice that virtually all of a selected strain develop malignant neoplasms from the ordinary proliferative stimuli occurring under even the best of living conditions. Only experiments, as yet not performed, will show whether the maximum experimental proliferative stimulation may overcome the resistance of pure noncancer strains of animals. Evidently in the heterozygous human race, maximum stimulation is almost always capable of overcoming such resistance as exists, since so large a proportion of people exposed to excessive amounts of roentgen rays have developed cutaneous cancer, but even so, we do not know of any particular form of tissue stimulation in man that leads to 100 per cent. cancer production. Conversely, cancer often develops in tissues in which there has apparently been no unusual amount of injury or stimulation; e. g., in man, cerebral gliomas occasionally develop after a definite trauma as an apparent sequel, but in most cases of cerebral glioma there is no history of trauma to the head, and in retinal glioma we see many cases occurring in a single family with no suspicion of any injury whatever to the retina. In this last case the hereditary influence is so great that merely the ordinary physiologic wear and tear seems to be sufficient to lead to malignancy.

C. *RELATION OF ANIMAL EXPERIMENTS TO HUMAN DISEASE*

As to the bearing of the experimental evidence on the problems of human cancer, the following facts must be considered:

1. Cancer in animals is, in all essential respects, the same disease as cancer in man.

2. The laws of heredity are fundamental biologic laws applicable to every living thing, whether plant or animal. Mendel worked out the principles of inheritance with garden peas, and these principles have been found to hold good for all multicellular living things, whether plants or animals, whether peas or mice, insects or cows. This must inevitably be so, since all multicellular creatures take origin through fertilization of one cell by another, and since the fertilized cell produces quite the same sort of being as the one from which it came. If the laws of heredity established with peas hold good for mice, they should hold for men, for there is far less difference between mice and men than between mice and peas.

3. We have, furthermore, found that these mendelian principles do appear in human inheritance, although as yet we have no completely satisfactory evidence of mendelian inheritance in human cancer. Because man is a slow-breeding animal with very small families, it is not possible to study all sorts of inheritance in the human species, but there are some striking pathologic conditions which may be followed. For example, in hereditary hemophilia and in color blindness we find perfect illustrations of an inherited sex-linked recessive unit character. While we cannot usually secure sufficient data to test out the mechanism of human inheritance, Eugen Fischer[71] reports that in the crossing of Europeans with Hottentots, transmission of characters occurs in accordance with mendelian expectations.

Another illustration of human heredity conforming to the mendelian principles is seen in the separation into four groups of the human red corpuscles in respect to iso-agglutination.[72] Fischer, indeed, says that "all known normal and pathological characteristics that are transmitted by heredity follow the mendelian laws."

67. Siemens: Deutsch. med. Wchnschr. **48**: 1302, 1919.
68. Hagedoorn-La Brand: Am. Naturalist **54**: 363, 1920.
69. Moore, H. D.: J. Immunol. **4**: 425, 1919.
70. Hyde: J. Immunol. **8**: 267, 1923.
71. Fischer, Eugen: Naturwissensch. **10**: 640, 1922.
72. Ottenberg, Reuben: J. Immunol. **8**: 11 (Jan.) 1923.

Therefore, if it is accepted that an important element in the occurrence of cancer in mice or other animals is the inherited character of the tissues, the same thing in all reasonable probability must be accepted for man. Furthermore, as pointed out previously, we do undoubtedly have instances in which the tendency to cancer has been inherited in man.

Thus, among Warthin's carefully studied material appear families in which the cancer occurrence corresponds beautifully to the mendelian expectation, and in Levin's analysis of human cancer from a geneticist's point of view, the evidence led him to interpret it as indicating that resistance to cancer behaves as a dominant, susceptibility as a recessive character.

If we accept Maud Slye's contention that resistance to cancer behaves as a dominant character, and susceptibility as a recessive, we can understand the fact that human cancer commonly appears as an isolated condition in only a few members of a family, is often entirely absent in families of large numbers, and occasionally appears in a large proportion of the members of another family. As shown by the typical mendelian chart (Fig. 2), a recessive character does not appear in the first hybrid generation formed by crossing a recessive with a dominant character. If the heterozygous and dominant offspring of this generation are bred with dominant, the recessive never appears

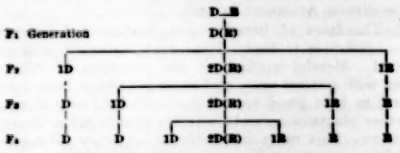

Fig. 2.—Typical mendelian inheritance: *D*, dominant; *R*, recessive; *D (R)*, presence of both factors, or heterozygous.

(Fig. 4). When heterozygous individuals are bred together (Fig. 3), the recessive character does appear, but only in the ratio of one in four of the offspring. If two recessives are bred together, however, then

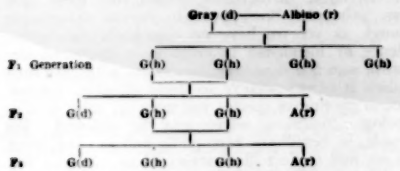

Fig. 3.—Typical mendelian inheritance in crossing gray and albino mice.

the offspring all show the recessive character. If herterozygous offspring are bred with pure recessives, half the offspring exhibit the recessive character (Fig. 5).

Grayness is dominant, albinism is recessive. In the first hybrid generation the offspring will appear gray, but all still carry the recessive gene, i. e., they are heterozygous. When these are bred together, the mice of the F_2 generation yield offspring in the following proportions: one pure (dominant) gray which does not carry the gene for albinism, two heterozygous grays carying both genes, and one albino (pure recessive) which does not carry the gene for grayness.

In Figure 4, dominant mice are bred with heterozygous mice (derived from the crossing of gray and albino mice). As the dominant gray gene is always

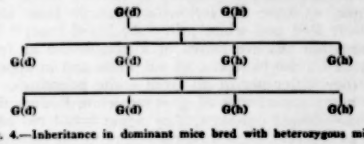

Fig. 4.—Inheritance in dominant mice bred with heterozygous mice.

present in the offspring, they always appear gray, although half of them have the capacity to transmit albinism when mated either with albinos or with heterozygous grays, as shown in Figure 5.

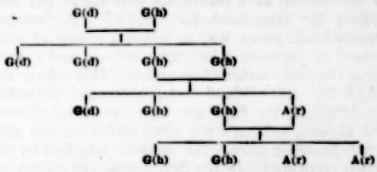

Fig. 5.—Way in which a recessive character reappears when heterozygous offspring are bred together, or when bred with recessives.

Transferred to the terms of human cancer, if this is a condition determined by a recessive unit character, then we should expect that in the heterozygous human race, breeding indiscriminately in respect to cancer ancestry, the recessive character of tumor susceptibility might crop out almost anywhere in a given family group, and ordinarily involve only a small proportion of the entire family. If, through chance, two individuals who inherited the tendency to cancer, which ordinarily would not manifest itself until after the reproductive period is over, should mate and bring forth offspring, it might be expected that these would all inherit the cancer susceptibility, and the demonstrated existence of "cancer families" agrees with this hypothesis. Equally well does the more common occurrence of families that show no cancer correspond to the expectations of this hypothesis.

The fact that either, but not both, of two parents had cancer, would not require that the offspring should develop cancer, since the other parent might be resistant (and dominant) to cancer (even if he or she had cancerous relatives), and the offspring might correspond to a first hybrid generation, none of whom have cancer. If one parent has cancer and the other parent is heterozygous to cancer, which should be the usual situation in the family history of descendants of a single cancerous ancestor, then the first generation should show some cancer cases (pure recessives) and some heterozygous offspring which do not have cancer themselves, but all of which may transmit the tendency to cancer. It is also perfectly possible for heterozygous and dominant resistant individuals to mate with one another for several generations without the recessive (cancer) appearing; but, when heterozygous offspring of such unions mate, cases of cancer might appear. This is illustrated by Slye in such a chart as the

one here reproduced (Fig. 6). Here pure noncancerous (dominant), pure cancerous (recessive) and mixed (heterozygous) strains are shown extracted from common ancestors. Note how in the heterozygous strains (*C*), cancer crops out at intervals (16321, 20803) after three generations of direct ancestors with no cancer. This heterozygous strain continued through (Fig. 7) exhibited in the thirteenth generation a mouse (30908) with lung tumor despite the fact that its direct ancestors had shown no tumors for eight generations. On the other hand, none of the mice of the dominant, cancer-resistant strain (*A*) ever exhibited cancer during

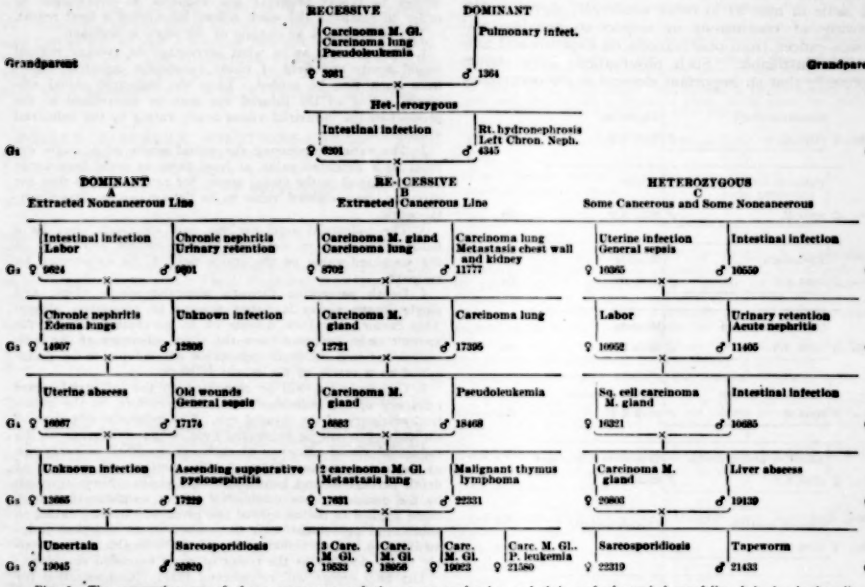

Fig. 6.—The segregating out of the noncancerous and the cancer tendencies, and their perfectly typical mendelian behavior in heredity; Strain 84, Br. 11 (Slye).

fifteen generations for which they were followed, whereas the recessive, tumor-bearing strain (*B*) continued to produce mice succumbing to neoplasms in every generation.

With human families, cancer appearing at long intervals in such a strain as *C* would ordinarily be interpreted as an example of cancer appearing in an individual without cancer ancestry, which is entirely contrary to the fact. The heterozygous human being could transmit cancer tendencies unrevealed through an indefinite number of generations, provided it failed to mate with recessives or other heterozygotes; but when cancer did come out it would be as definitely inherited as if each ancestor for several generations back had had cancer. Failure to appreciate the manner in which inherited characters are transmitted has caused most of the confusion resulting from the impossible attempt to learn the hereditary relation of cancer by analyzing mass human statistics.

Certainly these considerations fit well with what we do know of human cancer. Until some one has carried out the arduous studies necessary to confirm or refute Slye's conclusions, as to the exact way in which the demonstrated influence of heredity is transmitted, it may be fair to consider them as at least offering a reasonable explanation of the influence of heredity on human cancer. It probably will be a long time before we shall have enough reliable information, controlled by necropsy records, to determine the influence of heredity on human cancer by direct observation. Perhaps the easiest way to test the validity of the hypothesis that in man, as in mice, resistance behaves as a dominant inheritable character and susceptibility to cancer as a recessive, will be by securing records of the offspring of matings in which both parents had cancer. Here we should expect that all, or, allowing for premature death, nearly all, of the offspring of such a union that reach advanced age would develop cancer. Such statistics should not be impossible to secure, since they involve only two generations. But as yet, at least in America, we probably cannot find two generations in which we can be sure of all the final diagnoses. Possibly in some more advanced country, such as Switzerland, where necropsies are more usual, the necessary data can be obtained.

SUMMARY

The coincident development of the sciences of genetics and experimental cancer research has begun to yield evidence bearing on the relation of hereditary influences to cancer occurrence. Human statistical evi-

dence is not of sufficient accuracy or extent to render it of any value in the study of this subject. The occurrence of cancer families is unquestionable, but of doubtful value because of the possibility that such occurrences may depend solely on chance. Family occurrence of rare neoplasms, such as glioma of the retina, multiple neurofibromatosis, and multiple cartilagenous exostoses, cannot be dismissed as depending on chance. Human evidence being inadequate, we are compelled to rely on evidence from observations on animals. It is known that the principles of inheritance are the same in all species of animals as well as in plants, and that cancer, in its fundamental respects, is the same in man as in other mammals; therefore the drawing of conclusions in respect to heredity and human cancer from observations on experimental animals is justifiable. Such observations have shown repeatedly that an important element in the occurrence

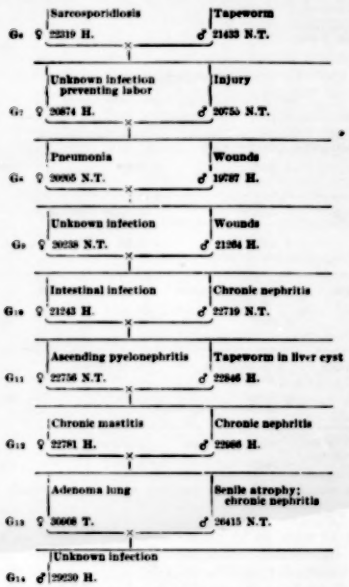
Sarcosporidiosis
Tapeworm
G6 ♀ 22319 H. ♂ 21433 N.T. G6
Unknown infection preventing labor
Injury
G7 ♀ 20674 H. ♂ 20755 N.T. G7
Pneumonia
Wounds
G8 ♀ 20305 N.T. ♂ 19787 H. G8
Unknown infection
Wounds
G9 ♀ 20238 N.T. ♂ 21264 H. G9
Intestinal infection
Chronic nephritis
G10 ♀ 21243 H. ♂ 22719 N.T. G10
Ascending pyelonephritis
Tapeworm in liver cyst
G11 ♀ 22756 N.T. ♂ 22846 H. G11
Chronic mastitis
Chronic nephritis
G12 ♀ 22781 H. ♂ 22666 H. G12
Adenoma lung
Senile atrophy; chronic nephritis
G13 ♀ 30608 T. ♂ 26415 N.T. G13
Unknown infection
G14 ♂ 29230 H. G14

Fig. 7.—Heterozygous branch continued through the fourteenth generation; Strain 84, Br. C. (Slye): *H*, heterozygous; *T*, tumorous; *N.T.*, nontumorous; *G*, generation.

of spontaneous tumors in animals is determined by the heredity of the animals under study. Maud Slye has produced, solely through breeding, strains of mice that have never developed tumors in twenty and more generations, strains of mice in which the natural death of the adults is by cancer, and strains with less degrees of frequency of cancer occurring according to the mendelian expectation. In these animals the capacity to resist cancer behaves as a dominant character, the susceptibility to cancer as a recessive. There is evidence available which supports the inference that in man also the susceptibility to cancer behaves as an inherited recessive character.

REPORT OF THE COMMITTEE ON ESTIMATING COMPENSATION FOR EYE INJURIES *

To the Chairman and Members of the Section on Ophthalmology of the American Medical Association:

Your committee, after careful consideration of numerous legal opinions relative to compensation for eye injuries, and after consultation with various industrial engineers and members of industrial commissions, has arrived at the conclusion that there is much research work needed to establish certain values mentioned in the reports heretofore presented. This research work has been inaugurated, and the committee wishes to report progress and requests its continuance in order to complete the work before submitting a final report.

The following is an outline of the work undertaken:

1. The question as to what percentage of average normal visual acuity and field of vision constitutes industrial blindness must first be settled. Then the industrial visual efficiency rating of the injured eye may be determined as the product of the industrial visual acuity rating by the industrial visual field rating.

2. The rating expressing the visual acuity of a single eye must be a weighted value, at least twice as great importance being assigned to the visual acuity for near vision as that for distance, the weighted value to be determined by experimental work.

3. The industrial zero for the field of vision shall be a field representing in weighted value a certain percentage of the weighted value of the entire field, to be determined by research.

4. Depth perception through binocular single vision and single image vision is either present or completely absent. This factor, therefore, admits of no percentage rating; the amount to be deducted from the visual efficiency *of the individual* for loss of depth perception or diplopia to be determined as a result of the research work.

5. Compensation will be computed on the industrial *visual efficiency of the individual:* not, as heretofore, on the industrial efficiency of the injured eye. The industrial efficiency of the two eyes will be expressed by a weighted average of the industrial visual efficiency of each eye, modified or otherwise as the circumstances dictate by the presence or absence of depth perception and binocular single vision. Some research by the committee has established that a weighting factor of three applied to the uninjured eye gives an efficiency rating in substantial agreement with the consensus of technical judgment as to correct visual rating of the individual; this possibly to be modified as the result of more extended research.

The final report will recommend that: "Compensation for loss in industrial visual efficiency shall be that percentage of the compensation provided by law for total permanent disability of both eyes equal to the percentage loss in industrial visual efficiency of the individual." This, it will be noted, suggests change by legal enactment to establish the compensation figure for total permanent disability of both eyes. In the committee's opinion, such change in legislation will result in far greater justice to all concerned.

6. Considerations frequently will require that the compensation to be paid for total permanent disability of both eyes shall vary with the probable future earning power and with the age of the individual. Part of the research work inaugurated in collaboration with the Wisconsin Industrial Commission and the United States Department of Labor is the compilation of a table which will afford an approximate but equitable basis for computing average future earning power in terms of current earning power. A little consideration will convince one of the indisputable character of the principle here stated. The financial loss of the individual and his dependents is clearly greater in the case of an individual of large earning power than in the case of an individual of limited earning power. So, too, the financial loss is much greater

* Read before the Section on Ophthalmology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

when the injury is experienced early in life than when the injury is experienced late in life. Both these factors are of such magnitude that they cannot be ignored without a gross inequity.

It is hoped that, at the next meeting of the section, sufficient research will have been completed as to allow a final report to be submitted.

NELSON M. BLACK, Chairman,
HARRY S. GRADLE,
JAMES M. PATTON.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

POLLEN ALLERGEN SOLUTIONS-SQUIBB.—Solutions containing the sodium chloride-soluble protein from the isolated pollen of various species of plants. Pollen Allergen Solutions-Squibb are intended for the prevention and treatment of hay fever.

Actions and Uses.—See Pollen and Epidermal Extract Preparations and Biologically Reactive Food Proteins, New and Nonofficial Remedies, 1923, p. 234.

Dosage.—See Pollen and Epidermal Extract Preparations and Biologically Reactive Food Proteins, New and Nonofficial Remedies, 1923, p. 234.

Pollen Allergen Solutions-Squibb are marketed in the following forms:

Set A: ten vials containing for each consecutive dose (Nos. 1 to 10, inclusive) 0.00005, 0.0001, 0.0002, 0.0004, 0.0008, 0.0016, 0.0032, 0.0064, 0.0128 and 0.025 Mg. of pollen nitrogen respectively, ten vials of sterile diluent with which to make the proper dilution of each dose, 1 tube of pollen allergen for diagnosis only, and a syringe.

Set B: five vials containing for each consecutive dose (Nos. 1 to 5, inclusive) 0.00005, 0.0001, 0.0002, 0.0004 and 0.0008 Mg. of pollen nitrogen respectively, five vials of sterile diluent with which to make the proper dilution of each dose, 1 tube of pollen allergen for diagnosis only, and a syringe.

Set C: five vials containing for each consecutive dose (Nos. 6 to 10, inclusive) 0.0016, 0.0032, 0.0064, 0.0128 and 0.025 Mg. of pollen nitrogen respectively, five vials of sterile diluent with which to make the proper dilution of each dose, and a syringe.

Set D: five vials (dose No. 10) each containing 0.025 Mg. of pollen nitrogen, five vials of sterile diluent with which to make the proper dilution of each dose, and a syringe.

Set E: five vials (dose No. 11) each containing 0.05 Mg. of pollen nitrogen, five vials of sterile diluent with which to make a proper dilution of each dose, and a syringe.

Manufactured by E. R. Squibb & Sons, New York. No U. S. patent or trademark.

The following products have been accepted:

Timothy Pollen Allergen Solution-Squibb.
Ragweed Pollen Allergen Solution-Squibb.

Pollen Allergen Solutions-Squibb are prepared by the following method: The pollen is weighed, extracted with ether, the residue dried and ground in a ball mill with 1 per cent. sodium chloride solution for from 12 to 24 hours. The nitrogen in the extract is determined by the Kjeldahl method and the extract diluted with glycerin and 1 per cent. sodium chloride solution until the final volume contains 60 per cent. of glycerin. The solution is then filtered through a Berkefeld filter, the filtrate tested for sterility and diluted so that each dosage form contains the declared quantity of pollen nitrogen.

RAGWEED POLLEN EXTRACT-SWAN-MYERS.—A liquid obtained by extracting the dried pollen of ragweed with a liquid consisting of 67 per cent. glycerin and 33 per cent. saturated solution of sodium chloride.

Actions and Uses.—See Pollen and Epidermal Extract Preparations and Biologically Reactive Food Proteins, New and Nonofficial Remedies, 1923, page 234.

Dosage.—See Pollen and Epidermal Extract Preparations and Biologically Reactive Food Proteins, New and Nonofficial Remedies, 1923, page 234.

Ragweed Pollen Extract-Swan-Myers is marketed in the following forms:

Series I: five vials containing for each consecutive dose (Nos. 1 to 5, inclusive) 2.5, 5, 10, 20 and 35 pollen units respectively, and five vials of sterile diluent with which to make the proper dilution of each dose.

Series II: five vials containing for each consecutive dose (Nos. 6 to 10, inclusive) 50, 70, 100, 150 and 240 pollen units, respectively, and five vials of sterile diluent with which to make the proper dilution of each dose.

Series III: five vials containing for each consecutive dose (Nos. 11 to 15, inclusive) 350, 500, 700, 1000 and 1000 pollen units, respectively, and five vials of sterile diluent with which to make the proper dilution of each dose.

Complete Series: packages containing the 15 doses, described in Series I, II and III.

Manufactured by Swan-Myers Company, Indianapolis, Ind. No U. S. patent or trademark.

Ragweed Pollen Extract-Swan-Myers is prepared by grinding the dried pollen of ragweed in a ball mill with a liquid, using a menstruum composed of 67 per cent. of glycerin and 33 per cent. of saturated sodium chloride solution to moisten the pollen. Then sufficient of the glycerin-sodium chloride solution is added so that the total volume is such that each Cc. represents 10,000 units; 1 unit corresponding to .00001 mg. of dried pollen. This mixture is filtered through paper pulp and then through a Berkefeld filter. It is tested for sterility before diluting, after dilution and after filling.

LUMINAL (See New and Nonofficial Remedies, 1923, p. 63).

The following dosage form has been accepted:

Luminal Tablets, ½ grain.

EXTRACT OF MALT (See New and Nonofficial Remedies, 1923, p. 177).

Malt Extract (Unmedicated)-P. D. & Co.—A preparation essentially similar to extract of malt, U. S. P., but containing 10 per cent. of glycerin. One gram of Malt Extract (Unmedicated)-P. D. & Co. converts 5 to 7 Gm. of starch to maltose and dextrin in thirty minutes at 40 C. by the assay method of the U. S. Pharmacopeia for Diastase.

Actions and Uses.—See article on Extract of Malt (New and Nonofficial Remedies, 1923, p. 177).

Manufactured by Parke, Davis & Co., Detroit. No U. S. patent or trademark.

Malt Extract with Cod Liver Oil-P. D. & Co.: Each 100 Cc. contains Norwegian cod liver oil, 25 Cc. and malt extract (unmedicated)-P. D. & Co., 75 Cc. with chocolate and extract of vanilla as flavoring agents.

ARGYN (See New and Nonofficial Remedies, 1923, p. 330).

The following dosage form has been accepted:

Argyn Tablets, 6 grains.

OVARIAN SUBSTANCE-WILSON (See New and Nonofficial Remedies, 1923, p. 212).

The following dosage forms have been accepted:

Tablets Ovarian Substance-Wilson, 2 grains.
Tablets Ovarian Substance-Wilson, 5 grains.
Capsules Ovarian Substance-Wilson, 2 grains.
Capsules Ovarian Substance-Wilson, 5 grains.

OVARIAN RESIDUE-WILSON (See New and Nonofficial Remedies, 1923, p. 212).

The following dosage forms have been accepted:

Tablets Ovarian Residue-Wilson, 2 grains.
Tablets Ovarian Residue-Wilson, 5 grains.
Capsules Ovarian Residue-Wilson, 5 grains.

The Weight of Bacteria.—Knowing the measurements of bacteria, it follows that the volume may be computed; knowing the volume and the weight of the substance of the microbe as compared with an equal volume of water, the weight of the organism can be arrived at. A cylinder the size of the typhoid bacillus and 1.2 times as heavy as water would weigh almost exactly 0.000,000,002 milligram. Five hundred millions of them, in other words, would weigh a milligram. A milligram is one thousandth of a gram, and a gram in turn is approximately one thirtieth of an ordinary ounce. Fifteen millions of millions of typhoid bacilli, therefore, would be required to balance an ounce weight. Viewed from this standpoint, it is not difficult to believe that bacteria are in reality about the smallest of known living things.—Kendall, A. I.: Civilization and the Microbe.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 29, 1923

THE STATUS OF BLOOD TRANSFUSION

Novel procedures in medical practice find application so promptly in these days that the scientific progress that they represent is all too often soon forgotten. There is another aspect to the employment of new methods and new drugs that cannot always be so easily dismissed. Few innovations have been so thoroughly studied or so satisfactorily standardized and controlled at the time of their introduction into practical medicine as to render them perfect or even fool-proof in the hands of the uncritical practitioner. Consequently, the newest acquisitions to the healing art may sometimes become potential menaces until their limitations have been made clear. The use of the roentgen rays in the period following their discovery was attended by many serious accidents. New chemical compounds that give great promise of unusual potencies are sometimes found to have limitations in their usefulness represented by unexpected idiosyncrasy in patients, or occasional "side-reactions" that limit their usefulness. It is largely for this reason that the "ideal" antiseptic, laxative, anesthetic or analgesic remains to be discovered. Only a survey over a longer experience enables the clinician to balance advantages against disadvantages and thus learn the method of choice in a given emergency.

Something of this sort is now encountered in the consideration of blood transfusion, a procedure that belongs to the newer triumphs of medicine. Nothing seems to surpass the efficacy of blood in replacing loss of the circulating medium of the body. A physiologist established a standard hemorrhage in dogs by bleeding the animals systematically until the blood pressure was 28 mm.: a state in which the dog was about as likely to live as it was to die. He then administered sodium citrate solution, and the dogs died in every instance. He gave saline solution intravenously, but, after a temporary improvement, the mortality was increased; and, after injection of acacia solution, much the same result was observed. When compatible whole blood was given, all animals recovered. Clinical experience with man practically substantiates this experimental finding.

Transfusion in man no longer is primarily a problem of blood vessel surgery, as it was fifteen years ago. The indirect method of transferring blood from one person to another has come into deserved vogue. A surgeon has remarked that the practice of entering the vessels with needles instead of using the scalpel has removed much of the danger of infection and injury to both the donor and the recipient. When blood vessel surgery was resorted to, the number of times an individual could give or receive blood was limited. Aside from the difficulties of instrumental technic, two outstanding factors have interfered with universal success: first, the tendency of the blood to clot rapidly, and second, the hemolysis produced because of the incompatibility of bloods. The latter difficulty must be met at present by special care in the choice of the donor of the blood. The serologic aspects of transfusion have been studied assiduously in recent years after the discovery of the unlike agglutinating reactions of the bloods of different persons. Blood incompatibilities between donor and recipient can now be largely avoided. The "typing" of serums has become well standardized so that professional or semiprofessional donors can be satisfactorily "listed" for prompt use. An hour's preparation or less may then suffice for an emergency transfusion.

The problem of clotting has not been so satisfactorily solved. The citrate method has, it is true, had large success, and has until recently been the procedure of choice. Unfortunately, the coagulation of blood cannot be retarded by chemical agents without alteration of some of its biochemical and biologic properties. For example, sodium citrate leads to destruction of the blood platelets, which apparently play an important part in the coagulation of the blood. The hemostatic properties of the circulation thus become impaired. The added chemical also develops anticomplementary properties in the plasma, and reduces the phagocytic and opsonic powers of the blood. These facts would naturally argue against the use of the citrate method in the general infections when a resistance action is sought. The corpuscles are said to become more friable—a result particularly undesirable in combating certain types of anemia. There are other occasional systemic "reactions," varying from slight malaise to severe chills and febrile symptoms, that may give the operator considerable concern.

Much effort is being expended to learn how to avert or combat such untoward phenomena. This has led to improvement in the transfusion of whole blood without the use of an added anticoagulant. The procedure has recently been enthusiastically lauded by Brines,[1] as the result of his experience. The reactions following the use of unmodified blood are said to be fewer and milder than those following the citrate method. Brines remarks that while the latter should not be abandoned,

1. Brines, O. A.: The Transfusing of Unmodified Blood, Arch. Surg. 7: 306 (Sept.) 1923.

the whole blood method should, whenever possible, be substituted for it; however, there is never a time when citrated blood is as good as whole blood.

The indications for transfusion have become so varied and numerous, and its usefulness so gratifying that it seems worth while to remind our readers of how much this helpful procedure really may mean to a patient. As Brines has succinctly stated the effects:

> Transfusion corrects disturbed circulatory balance; provides increased oxygen transportation to the tissues; increases, to a greater extent than do lactates, calcium salts or any other substances, the coagulability of the blood, and tides the patient over a critical period, until his blood-forming centers can take up their burden or he acquires the proper resistance. It combats infection by increasing the general resistance and by the bactericidal action of the whole blood. It restores the bulk of the blood, but more especially the red corpuscles; and it is important to note that young erythrocytes are better oxygen carriers than old ones.

PATHOLOGIC MANIFESTATION OF LACK OF VITAMIN A IN THE DIET

Precise explanations of the nutritive disasters that ensue when experimental animals are subjected to a dietary deficient in one or more of the known vitamins have not yet been forthcoming. Little is gained from a strictly scientific standpoint by announcing that the organism needs an antiscorbutic or an antineuritic substance to insure well-being. Mere statements of observed facts, however cogent they may be, do not necessarily furnish a clue to the etiology of disease. In the case of the so-called avitaminoses, the utmost uncertainty as to their respective specific causes still prevails. Each new clue, however, affords a possible step to a better understanding. Scurvy and rickets leave manifestations that present themselves to the pathologist in clear-cut fashion. The lesions of these diseases are characteristic. When the nutritive failure is due to a lack of vitamin B there is not always a comparable manifestation of pathologic tissues. The same has been true in general of the upsets in bodily welfare attributable to a shortage of vitamin A in the diet; consequently it has been difficult to point out just what the significance of this food factor is. Since vitamin A is commonly associated with fats, the assumption was early made that it is concerned with the metabolism of these foodstuffs. No such relationship has been demonstrated.

It is known, however, that lack of vitamin A may be associated with the appearance of ophthalmia as well as with the occurrence of phosphatic urinary calculi. Daniels, Armstrong and Hutton[1] of the State University of Iowa College of Medicine recently described the frequent occurrence of nasal sinusitis as the result of a diet poor in vitamin A, the middle ear also being involved. The nasal passages and sinuses were filled with pus cells; the mucosa was also infiltrated with polymorphonuclear cells. The epithelium was ragged, and in some areas desquamated. The middle ears were examined microscopically, and the exudate that filled them was found to consist largely of polymorphonuclear cells. Such results were averted by the mere addition of a source of vitamin A to the otherwise unchanged ration. Consequently, the Iowa investigators argue that this vitamin must be an important factor in the immunity of the organism to pyogenic infections, and that the general breakdown of the organism following the ingestion of diets low in the fat-soluble vitamin is secondary to such infection. A diet lacking in fat-soluble A makes possible the bacterial invasion of the mucous membranes of the ear and nasal cavities.

One outcome of such studies is the conclusion, advanced by Daniels and her co-workers, that the aspect of faulty nutrition most commonly observed in such avitaminosis, namely, loss of weight or failure to gain, is in reality due to infection in an individual whose resistance is lowered by faulty diet. If this is tenable, the curative effects of cod liver oil, milk-fats and egg-fats may in some measure be due to their influence on factors of immunity as well as the more commonly alleged restoration of a physiologic substance specifically required for certain nutritive functions.

1. Daniels, Amy L.; Armstrong, Margaret E., and Hutton, Mary K.: Nasal Sinusitis Produced by Diets Deficient in Fat-Soluble A Vitamin, J. A. M. A. 81:828 (Sept. 8) 1923.

WATER

Water has been the subject of various statements of both a conflicting and a misleading character in popular physiologic and medical literature. On the one hand, under the indefinite exhortation of "water internally, externally, eternally," the use of the universal solvent has been hailed as a panacea for various ailments. The prominent underlying hope in this advice seems to lie in the expectation that somehow and somewhere water can "flush out the system" almost as readily as one can clean the gutter with a hose from the hydrant. On the other hand, there has developed a suspicion in many cases that water may be a detriment to health unless it is drunk in definite ways or at definite times. Thus, the problem of the ingestion of water with meals has been vigorously debated, largely on the basis of untested hypotheses. The use of water has been made a factor in "reduction" treatments of obesity. Again, opinions have varied with respect to the allowance of water for patients suffering from a diversity of renal and cardiac disorders in which the elimination or transport of fluid is rendered more difficult. These instances are in striking contrast to the unquestioned desirability of increasing the water intake under circumstances in which anhydremia is threatened. Illustrations of the latter were recently discussed in these columns in connection with the systemic treatment of extensive superficial burns.[1]

A somewhat different conception has been broadcast as the result of Rowntree's studies at the Mayo Foun-

1. The Systemic Treatment of Extensive Superficial Burns, editorial, J. A. M. A. 81:663 (Aug. 25) 1923.

dation on the subject of water intoxication. He has clearly demonstrated, in numerous careful experiments on both man and animals, that water ingested in excess of the ability of the organism to excrete it leads to the exhibition of toxic symptoms. According to Rowntree,[2] water intoxication of this sort is manifested by "restlessness, asthenia, polyuria, frequency of urination, diarrhea, salivation, nausea, retching, vomiting, muscle tremor and twitching, ataxia, tonic and clonic convulsions, frothing at the mouth, helplessness, stupor and coma." The gamut of possibilities is thus so large that the suggestion of harm from water has loomed large in the minds of the uncritical. Consequently, the press of late has occasionally disseminated the supposedly scientific doctrine that "pure water is poisonous" to man.

It would be a mistake to allow such a ridiculous and unwarranted conclusion to gain any credence among the readers of popular scientific literature. Emphasis should be given to the fact that, to produce symptoms of "water poisoning," quantities greatly in excess of those taken voluntarily are necessary. Rowntree himself has clearly pointed out the ways in which Nature has provided adequately against the possibility of water intoxication. The sensation of satiety following the drinking of small or moderate quantities of water renders subsequent ingestion of larger amounts increasingly difficult. The pylorus prevents the sudden or immediate egress of large volumes of water, and consequently excessive ingestion results in gastric distention, which is followed in man by regurgitation and vomiting. Sometimes diarrhea helps to dispose of the excess. Furthermore, water is an effective diuretic so that accumulation in the body tends to be prevented after the absorption of large quantities.

How effective the factors of safety are is seen in many cases of chronic polyuria or diabetes insipidus in which the patients sometimes consume inordinate quantities of water without eliciting any symptoms of water intoxication, probably because of the very prompt elimination. Instances have been recorded, however, in patients suffering from chronic nephritis and hypertension in whom administration of water up to 10 liters a day provoked untoward results.[3] These are the cases that demonstrate the importance of convincing experimental information on the subject. Whether the effects are due merely to the inability of the body to excrete the surplus of water promptly, or whether the latter robs the organism of salt and thus starts a train of pathologic effects, remains to be learned. The rare clinical picture of forced excessive fluid intake, however, should not be made the basis of statements that cause utterly unwarranted fears lest the world be poisoned with water.

2. Rowntree, L. G.: Water Intoxication, Arch. Int. Med. 32: 157 (Aug.) 1923.
3. Miller, J. L., and Williams, J. L.: The Effect on Blood Pressure and Nonprotein Nitrogen in the Blood of Excessive Fluid Intake, Am. J. M. Sc. 161: 327-334 (March) 1921.

SALT INTAKE AND VASCULAR HYPERTENSION

There are few problems in practical medicine that can be solved by some extremely simple therapeutic formula. Whenever a physician reads of short-cut cures, it behooves him to be on his guard against the danger of error or the possibility of misunderstanding. By this we do not mean those flagrant instances of deception such as are practiced by the medical quack or the charlatan, but rather the mistakes concealed in unbounded enthusiasm or uncritical confidence in something novel. Every one who has occasion to deal with human patients soon learns that coincidence counts for many experiences that a less tutored person might put in the relation of cause and effect. The academicians have long warned against the fallacy of *post hoc ergo propter hoc*, and even the scientist needs to be reminded of it now and then.

Something of this sort seems to be called for in connection with the advocacy of an extremely low salt intake for the treatment of vascular hypertension. The limiting of the intake of sodium chlorid to 0.5 gm. daily for this purpose was championed by Allen [1] a few years ago. It was asserted that such therapy would produce a much greater reduction in pressure, a greater relief of symptoms, a speedier clearing up of retinal hemorrhages, and certain other beneficial results more effectively without further restriction in diet or change of exercise than would other methods of treatment. The recent experiences at the Medical Clinic of the Peter Bent Brigham Hospital in Boston have not been in accord with this prediction. O'Hare and Walker,[2] who have investigated the problem there, point out that if salt is such a determining factor, one should expect to find the blood chlorid increased in cases of hypertension, and to observe a definite relation between the level of this substance and that of the blood pressure. Yet the clinical observations demonstrate that "hypertension is compatible with normal blood chlorid," "normal tension is compatible with high blood chlorid," and "there is no relation between the height of the blood pressure and that of the blood chlorid."

The greatest salt retention in the body is observed in cases of nephritis with edema, and yet these usually show a comparatively low arterial tension. Furthermore, O'Hare and Walker find it difficult to imagine that changes in the salt metabolism of the body could occur rapidly enough to bring about the sudden and often marked changes that take place in the blood pressure from second to second and from minute to minute. The burden of proof thus seems to be placed on the protagonists of the new treatment. Meanwhile there will be a feeling of relief on the part of those who have found a truly salt-free regimen to represent a disagreeable if not an actually arduous undertaking.

1. Allen, F. M.: Arterial Hypertension, J. A. M. A. 74: 652 (March 6) 1920.
2. O'Hare, J. P., and Walker, W. G.: Observations on Salt in Vascular Hypertension, Arch. Int. Med. 32: 283 (Aug.) 1923.

Current Comment

SOME FACTORS PROMOTING HEALTH

Charitable institutions are not usually looked on as models for the formulation of plans or proposals involving hygienic reforms. There is a widespread belief that children, for example, who are under institutional management in orphanages and elsewhere are likely to suffer with respect to their rate of growth, nutritional condition and the incidence of disease. It would not be difficult to present evidence in support of this conclusion. Extreme generalizations, like extreme standardization, however, are all too often unwarranted. With respect to the health and growth of adolescents, this fact has recently been emphasized by a report of Holt and Fales[1] of New York on the growth and general condition of the boys and girls in a semicharitable home and school for poor children in that city. The inmates were housed in the heart of a business section cut off from that generous supply of light and fresh air so widely lauded. There they lived and played and studied during all but a few weeks of each year; yet, a careful survey showed that, despite the enforced restrictions of the environment and the admittedly simple regimen, strikingly good health and nutrition were maintained. The distribution of nutrients in the limited dietary showed considerable deviation from what the "experts" might designate as the optimum; yet health and digestion remained excellent and—most important—the gains in weight were satisfactory. In commenting on the outcome, Holt and Fales emphasize the important but often overlooked consideration that a wide deviation from prescribed standards may be consistent with health, provided certain essentials in the diet are furnished, and regularity of habits is maintained. Physicians and parents will do well to note the factors that contributed, even under supposedly unideal conditions, to a successful outcome. They were adjudged to be: (1) regularity in habits of eating and in sleep, rest and exercise; (2) a liberal but simple diet, and (3) freedom from contact infections.

THE NATURE OF INSULIN

The artificial synthesis of products of great physiologic potency is always a fascinating goal of biochemistry. This is particularly true in the case of hormones, such as those produced in the endocrine structures, which are present in extremely small concentration and therefore require large quantities of tissue material for their separation in any considerable amount. The suprarenal, thyroid and pituitary, for example, are being used commercially on a large scale for the manufacture of the desired pharmacologic agents that they contain. The latest addition to the list of useful depots of hormones is the pancreas, the source of the already highly valued insulin. The demand is large, and the isolation of a potent product is a laborious and costly undertaking. Before the prospect of a synthesis of the active substance can be entertained, its chemical structure must be ascertained. Consequently, considerable energy has already been devoted to this problem. The earlier indications[1] that insulin may be protein in nature have recently been supported by the investigations of Dudley[2] at the National Institute for Medical Research in England. He points out that its ready absorption, its failure to pass through an ultrafilter, and its rapid digestion by trypsin, particularly by pepsin, all indicate that it is most probably a substance having a very complex structure and protein-like in its nature. Consequently, Dudley points out that the hope of its isolation as a chemically pure substance becomes slender, and of its synthesis very remote, by methods at present at our disposal. Furthermore, we are reminded that the administration of insulin by mouth is not feasible on account of its rapid destruction by the digestive enzymes, and the relatively large size of its molecule makes it unlikely that absorption from mucous surfaces, such as those of the nasal passages, a method that has recently proved useful in controlling diabetes insipidus with pituitary extract, will be practically useful in the case of insulin.

THE DEVOLUTION OF ADVERTISING

As our readers probably know, "patent medicine" advertising is as old as, or perhaps older than, the newspaper itself. The history of the newspaper dates back only about three hundred years, whereas circulars vaunting the merits of proprietary preparations can be found in the records of antiquity. In the recent survey of the development of the newspaper, Miss Lucy M. Salmon,[3] professor of history in Vassar College, calls attention to the development of "patent medicine" advertising:

> The early commercial advertisements were largely haphazard in their form and hence in their appeal. In the middle of the last century, Hayward noted that pain or the fear of pain was the most active stimulant to advertising and that this resulted in the supremacy of patent medicine advertising. Since vanity made the next strongest appeal, the advertisers of beauty producers followed hard after quack doctors. But anaesthetics and science have found "a better way" for the relief of suffering, while the balance has been shifted from interest in personal beauty to the more vital things in life.

Perhaps in crediting the new point of view she would have done better to give some of the credit to an awakened moral sense, which was responsible for the development of truth in advertising campaigns and for the purging of the press of this type of advertising. She calls attention, however, to one point that has not been given adequate consideration in the discussion of this problem. Probably few readers realize that the advertising pages of our periodicals will be taken by the historian of the future as an adequate picture of the civilization of the period. Of this, Miss Salmon says:

> The numerous advertisements of patent medicines, for example, that were announced as cures for every ill known to the body or the mind are to the historian in themselves wilful

1. Holt, L. E., and Fales, H. L.: Observations on the Health and Growth of Children in an Institution, Am. J. Dis. Child. **26**: 1 (July) 1923.

1. Doisy, E. A.; Somogyi, M., and Shaffer, P. A.: Some Properties of an Active Constituent of Pancreas (Insulin), J. Biol. Chem. **55**: 31 (Feb.) 1923.
2. Dudley, H. W.: The Purification of Insulin, and Some of Its Properties, Biochem. J. **17**: 376, 1923.
3. Salmon, Lucy M.: The Newspaper and the Historian, Oxford University Press, 1923.

attempts to deceive an ignorant public, and while obviously false they are records of the baser elements in men; of the proneness of the ignorant to grasp at straws; of the general lack of information in regard to hygiene, sanitation, and the general welfare of the human body, and of right living; of the low standards of the press that lends itself to such advertising, and of the low standards of a community that tolerates such advertising in its press. Advertisements giving fictitious valuations of articles that their owners desire to sell are, for the historian, unimpeachable records of prevailing low business standards.

No doubt the present epoch in advertising will be known as the period of the advertising blurb. Never before has the public been regaled with such an assortment of high flown, exuberant, exotic and exaggerated language. It is apparently not sufficient to exploit the most useful or desirable device, food substance or vehicle, particularly the automobile, purely on its merits. All of the mythology of antiquity, the mysteries of science and the hypothesis of fiction are called on to make a sale. The trend has been away from the pushing of the pernicious with false and fraudulent claims and toward the urging of the useful with exaggerated, misleading hokum.

A SIDE LIGHT FROM THE SOURCE ON OSTEOPATHY

In 1874, Andrew T. Still founded osteopathy. He tells about it in his autobiography. He tried to get started in Kansas, but the powers at Baldwin University refused to permit him to expound his doctrines at that institution. In May, 1875, he was in Kirksville, Mo. It appears that he rather anticipated having a hard time, and he tells that his wife promised to stand by him and help him fight his battle. At this point in his story he presents a little incident which we have thought worth quoting:

> I did not tell her [his wife] that when I came to Missouri I found a letter addressed to my brother Edward, from brother Rev. James M. Still, of Eudora, Kans., stating that I was crazy, had lost my mind and supply of truth-loving manhood. I read it and thought, as the eagle stirreth up her nest, so stir away, Jim, till your head lets down some of the milk of reason into some of the starved lobes of your brain. I believed Jim's brain would ripen in time, so I let him pray, until at the end of eighteen years he said:
>
> "Hallelujah, Drew, you are right; *there is money in it*, and I want to study 'Osteopathy.'"

We acknowledge that we are responsible for the italics.

The Chastisement.—Harsh punishment inflicted in anger relieves the parent's overcharged mind, but in most cases it serves no other useful purpose, and, in the last analysis, often does irremediable harm. Spanking and whipping are the easiest forms of punishment and the least intelligent. The parent, angered by something the child has or has not done, vents his own fury in this way. There is little logic in such punishment, and less justice. The chastisement is not measured to fit the scale of the offense; its severity depends largely on the physical strength of the parent and the degree to which he is incensed. The animal rage which it creates in the parent weakens his self-respect, and the majority of parents are heartily ashamed of themselves after such scenes with a child. It is not conducive to comfort to know that simply because one is larger and stronger one has permitted himself to inflict brute force on a child.—Brown, Alan: The Normal Child, New York, the Century Company, 1923.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Chiropractors Move.—From three to eight true bills have been returned in circuit court by the last three grand juries against J. A. Robinson, D. C. Thompson and G. R. Ashworth, chiropractors of Selma, for practicing medicine without a license. Trials on from one to three of these indictments have been held, resulting in a uniform verdict of guilty and fines varying from $50 to $100. Judge Hobbs has imposed an additional penalty of thirty days' hard labor against each of the defendants. An appeal to the supreme court in one of the eight cases against Robinson confirmed the fine but changed the hard labor sentence to thirty days in jail. Robinson has left for Tuscaloosa, and Ashworth for Eufaula, it is reported.

Health Work Endangered.—In a bill introduced in the senate, September 6, abolition of the antituberculosis commission created in 1915, and entailing an annual appropriation of $6,000, is sought.——The time limits on appropriations from national funds for county health work expires this fall, and it is feared that some of the departments may have to be closed. The counties and state are expected to maintain such departments after that time. Dr. W. K. Sharpe, Jr., Florence, federal sanitary official for the Tennessee Valley, is urging members of the state general assembly to vote funds for health work in the counties.

CALIFORNIA

Personal.—Dr. Albert K. Dunlap has been appointed superintendent of the Sacramento County Hospital to succeed Dr. H. E. Morrison, who resigned recently.——Drs. Robert Hector, John W. Peck and William R. Boone have resigned as members of the board of health of Berkeley.——Dr. Paul Bresee, Los Angeles, missing for nearly a week, was recently found in the mountains near Mojave, where he had fallen into a crevice from which he could not get out.——Dr. Luther M. Powers has been reappointed health commissioner of Los Angeles.——Dr. Milo B. Pond, Napa, has resigned as a member of the board of pension examiners for the county. Dr. Laurence Welti, Napa, will succeed him.

Hospital News.—The New Community Hospital, San Mateo, was opened for public inspection, September 8.——The new maternity building for Fabiola Hospital, Oakland, will be opened to the public, November 1, according to reports. This wing having fifty beds and a roentgen-ray department, was erected at an approximate cost of $250,000.——The Napa General Hospital is to continue under new management, it is announced.——The new addition to the Pasadena Hospital, known as the West Wing, and having a capacity of 104 beds, was formally opened to the public, August 23.——The contract has been let for the new St. Joseph's Hospital, San Diego, for $650,000. Two additional 125-foot wings will be erected at a cost of $400,000.——Dr. Thomas J. DeVaughn, city health officer of Huntington Park, and Dr. Anderson E. McDowell, Los Angeles, have become joint owners of the South Side Hospital, Huntington Park, having purchased the property of J. W. McKenney. Several additions will be made. The renovated institution will be known as the "Mission Hospital."

COLORADO

Personal.—Dr. William S. Prout, M. C., U. S. Army, has returned from a tour of service in the Philippine Islands, and is now stationed at Denver.——Dr. John W. O'Connor, for many years chief surgeon of the Denver and Rio Grande Railroad Company, has resigned under the pension plan of the road, and has been succeeded by Dr. John F. Roe, Denver.

GEORGIA

Five-Year Clinic to Be at Athens.—Athens has been selected by the National Child Health Association for a five-year child health demonstration; $250,000 has been set aside from the Commonwealth Fund for conducting this center, which will be established in about a month with a maternity

clinic as the first step. The association will also send experts in physical education, a specialist in children's diseases and others.

IDAHO

State Sanatorium Bill Defeated.—At the last session of the Idaho legislature, a bill to provide two state sanatoriums, was defeated. The sanatorium fund of $160,000, collected by special tax, reverted to the state treasury.

ILLINOIS

Physician Fined.—According to reports, Dr. Alexander L. Brobeck, Hoopeston, was fined $200 and costs by Judge Watkins in the court at Milford, September 13, on a charge of selling intoxicating liquor.

Hospital News.—A large addition and a new nurses' home is planned for the Methodist Hospital, Peoria.——The Illinois State Association of Graduate Nurses, Chicago, will erect a cottage for tuberculous patients at the Naperville (Ill.) Sanatorium.——It is planned to close the Detention Hospital, Mill Street, Rock Island, and to have St. Anthony's Hospital take care of patients having contagious disease.

Health News.—The Vermillion County Medical Society went on record as opposing the establishment of a venereal disease clinic in Danville, at a meeting, September 4.—— Nearly 1,500 babies were registered at the State Fair Babies' Conference, it was announced by the state health department, September 8.——At a meeting of the school board of East St. Louis, September 11, $5,000 was appropriated to the health supervising committee for attention to the school children of the city this year.——In passing a new health ordinance, September 7, the Bloomington City Council left to the discretion of the city health director the best means of disinfection after contagious diseases. This was a debated subject last summer when a committee of the Association of Commerce sought to have the city continue fumigation. Dr. H. B. Wood, health director, said that he would abandon fumigation after using the formaldehyd he now has on hand.——At a conference in the offices of the state department of health, Springfield, September 5, the establishment of "Live a Little Longer" clubs throughout the state was urged. A complete physical examination on the birthday of the applicant will be the initiation requirement for membership. The conference was an outcome of the health examination campaign movement initiated in Illinois by the state department of public health, the American Red Cross, the Illinois Tuberculosis Association, the Illinois Federation of Women's Clubs and the Illinois League of Women Voters.

Chicago

Memorial to Dean Salisbury.—The board of trustees of the University of Chicago have recommended the establishment of a memorial at the university to the late Dean Rolin D. Salisbury.

Less Bone Tuberculosis.—The superintendent of the Spalding School, Chicago, which takes care of 400 crippled children, announced, September 18, that tuberculosis of the bone has greatly decreased in the school since 1918. Whereas five years ago 33 per cent. of the pupils in the school had bone tuberculosis, now only 18 per cent. are so affected.

Testimonial Dinner to Dr. Pusey.—A testimonial dinner will be given to Dr. William A. Pusey, President-Elect of the American Medical Association, at the first meeting of the year of the North Side Branch of the Chicago Medical Society, October 3. Dr. Pusey will give an illustrated lecture on "A Study of the Wilderness Road to Kentucky—A Doctor's Diversion."

Hospital News.—Approximately $58,000 was collected in Chicago, September 18, by the Federated Charities, which comprises twenty-nine organizations. This is $24,000 more than was collected in 1922.——The Evangelical Deaconess Hospital will soon start a campaign for $500,000 for a 150-bed hospital, research laboratory and dispensary on the north side. The hospital will be nonsectarian.

Illinois Society for the Prevention of Blindness.—Last year, for the first time, it is alleged, this society was able to report that not one case of total blindness from ophthalmia neonatorum was reported in Chicago. This fall the society, in conjunction with the state and city health departments, will conduct a special educational campaign among midwives. Special nurses have been put in this field by the board of education.

Help for the Hard of Hearing.—According to the latest statistics compiled by the University of Chicago, there are approximately 17,000 men and women in Chicago who are totally deaf. For six years the Chicago League for the Hard of Hearing has offered free employment service, education and recreation to hundreds of these people. A campaign to increase these activities and double the service was started, September 20. Lip reading classes have been formed, to be held Monday and Friday evenings, and afternoon classes on Tuesdays and Fridays.

Contraception Clinic Again Denied.—A second application for permission to establish a birth control clinic in Chicago (THE JOURNAL, August 4, p. 398) was presented, September 17, by the president of the Parents' Clinic Association. In this petition, attention was drawn to a recent opinion of the corporation counsel in which it was held that since the state statutes did not prohibit contraception teaching, the city health commissioner was not justified in refusing to issue a license if other provisions of the laws governing clinics or dispensaries had been complied with. The application which stated that the clinic was planned to "furnish free medical advice to needy parents with regard to limiting and spacing procreation according to the health and welfare of the individual and family," was denied. The American Birth Control League will hold a convention in Chicago, October 29-31.

INDIANA

Rabies Prevalent in Indianapolis.—This city is in the midst of an outbreak of rabies more serious than at any time in recent years, according to the board of health. Orders have been issued for every dog in the city to be immunized against the disease, which service will be given without cost to the owners, other than the actual cost of the serum. Thirty rabid dogs have been reported to the health department in forty days.

Health Board Demands Increase.—Decision to mandate the city council to increase the total tax levies for 1924 of the department of public health and charities, Indianapolis, from 8 cents on each $100 of taxables to 14.5 cents, was announced, September 12, by members of the health board, following a conference with city finance officials and councilmen. This course is necessary, it was said, in order to keep the department in operation.

IOWA

Special County Medical Meeting.—The Dubuque County Medical Society held a special meeting in Dubuque, September 19-20. Representatives from Northwestern University Medical School and Rush Medical College, Chicago; Johns Hopkins University Medical Department, Baltimore; Washington University Medical School, St. Louis, and the medical departments of state universities of Iowa, Nebraska, Minnesota, Wisconsin and Illinois, read papers. An open forum was held, September 19.

KENTUCKY

Hospital News.—Plans are being made for a new hospital and cottage building for the Kentucky Children's Home, Lyndon. The cost will be about half a million dollars.——A new three-story and basement hospital will be erected at Harlan at a cost of $60,000.

LOUISIANA

Segregation of Lepers.—Following the discovery of three lepers in New Orleans, Dr. Oscar Dowling, state health officer, ordered the houses segregated, guarded and placarded at the expense of the city. The city health officer declared that the city had not the means nor the money to care for the lepers and that the erection of a city leprosarium was not advisable. Dr. Dowling has requested a ruling of the attorney general on the question of whether lepers can be forced to furnish bond against escape. The erection of buildings to house 300 more lepers will be started about October 1 from the $650,000 appropriation from Congress for this purpose.

MARYLAND

Freshman Class at Johns Hopkins.—The freshman class at Johns Hopkins University Medical School, Baltimore, which begins work, October 1, will be composed of sixty-seven men and eight women. Limited accommodations necessitated refusing 190 students admission to the school. The freshmen come from sixty-eight different colleges and universities, three of them from Oxford University, England.

Scope of New Laws of City Health Department.—Four health protective ordinances will be presented to the Baltimore city council by the health department for adoption, which will place Baltimore in the front rank of American cities in regard to public health. Two of the proposed ordinances are complete and ready for introduction to the city council.

1. Meat inspection ordinance, which provides city inspection of the meat industry from the time the cattle reach the slaughter house until the meat is offered to the consumer.
2. Cold storage ordinance requiring the stamping of each article of food preserved by this means.
3. General food ordinance: A measure to safeguard the handling of foodstuffs by wholesalers, market and store dealers and the public. Licenses will be required for all food dealers.
4. Gas safety measure, to control the sale of gas tubing and other appliances.

Personal.—Dr. Karl Imhoff, in charge of the sanitary district of the Ruhr section of Germany, was recently the guest of Dr. John H. Gregory of Johns Hopkins University. Dr. Imhoff has been in the United States several weeks inspecting sewage disposal plants.——Dr. William H. Welch, director of the school of hygiene and public health, Johns Hopkins University, and Dr. William S. Thayer, who resigned, July 1, 1921, as professor of medicine and physician-in-chief of the Johns Hopkins Hospital, have been made officers of the Legion of Honor by the French government. The honors were conferred by the French consul at Baltimore, Mr. Leonce Rabillon, for contributions to medical science rendered France during the war and as American representatives at the Pasteur Centennial in France several months ago.——Dr. Ralph E. Barnes, medical consultant to the Maryland Tuberculosis Association, has resigned to accept the post of executive secretary of the Public Health Association of Jacksonville, Florida.——Dr. Waitman F. Zinn has opened a bronchoscopic clinic at the Mercy Hospital, Baltimore, the first of its kind in the city.

MASSACHUSETTS

Medical Examinations at the Boston Health Show.—A meeting of representatives of various medical societies, hospitals and the Boston Health Show was held at the medical library, August 23. It was voted that in the opinion of those present the medical profession should cooperate with the executive committee of the health show in bringing to the attention of the public the importance and benefits of periodic physical examinations as a health measure. It was also voted to request the president of the Suffolk District Medical Society, who called the meeting, to appoint a representative committee to act in cooperation with the committee of the health show to carry into effect the preceding vote. The following representatives were named: Dr. Gerald Blake, Massachusetts General Hospital; Dr. William H. Robey, Jr., Boston City Hospital; Dr. Channing Frothingham, Peter Bent Brigham Hospital; Dr. Loretta J. O. Cummins, New England Hospital for Women and Children; Dr. Wilson F. Phillips, Massachusetts Homeopathic Hospital; Dr. Hilbert F. Day, Boston Dispensary; Dr. George S. Derby, Massachusetts Charitable Eye and Ear Infirmary; Harold DeW. Cross, D.D.S., Forsyth Dental Infirmary; Dr. Karlton G. Percy, New England Pediatric Society; Dr. Frederick C. Irving, Boston Lying-In Hospital; Dr. Boris E. Greenberg, Beth Israel Hospital; Dr. Richard G. Walsworth, Free Hospital for Women; Dr. Henry S. Rowen, St. Elizabeth's Hospital; Dr. John F. Fennessey, Carney Hospital; Dr. Cleaveland Floyd, Boston Tuberculosis Association, and Dr. George A. Leland, Jr., Huntington Hospital. The action taken at this meeting does not conflict with the decision at a previous meeting that it is not wise to undertake a public demonstration of such a personal and confidential matter as a physical examination.

MICHIGAN

Food Poisoning at Hospital.—Dr. Thomas Gruber, superintendent of the Detroit Receiving Hospital, has ordered an investigation into the cause of the illness of twenty-five nurses and six physicians, who were taken ill, September 9, after eating food served at the noonday meal.

Aid for the Tuberculous.—The state legislature has passed a bill providing for the extension of the Mother's Pension to families in which the father is suffering from tuberculosis to such a degree that he cannot pursue a gainful occupation.—— The state tuberculosis association, in cooperation with the State Sanatorium for Tuberculosis, Howell, has inaugurated a system of follow-up work of patients discharged from the sanatorium. The work is carried on by correspondence and by visits of nurses. There are now on the list 426 names of persons in all parts of the state.

MINNESOTA

Research Fellowship Awarded.—The tuberculosis research fellowship maintained by the Hennepin County Tuberculosis Association at the Graduate School of Medicine of the University of Minnesota, Minneapolis, has been awarded to Frederick Eberson, Ph.D., formerly research bacteriologist for the Manchuria Plague Service, China, and associate in the research department of the Mayo Clinic, Rochester. This fellowship was founded two years ago for research on the detection, prevention and cure of tuberculosis.

Students' Health Service Enlarged.—The director of the students' health service at the University of Minnesota, Minneapolis, which attends to the medical needs of more than 10,000 students and faculty members annually, has asked that the present quarters be enlarged to meet increasing demands. The director's report shows that 60,463 medical services were rendered during the year. Seven full-time and fifteen part-time physicians are on the staff of the health service, in which four stations are maintained as dispensaries. The service is operated on a self-supporting basis, the income coming from a $2 fee per quarter levied against each student each quarter, and from charges made for hospital and dental service. The cost of operating the two main stations during last year was more than $57,000.

MISSISSIPPI

Personal.—Dr. James B. Black, Jr., Tupelo, for several years health officer of Lee County, has resigned to take a year's work in Johns Hopkins University, Baltimore.——Dr. Louis R. Brown, chief of staff of the Mississippi State Insane Hospital, Jackson, has resigned to accept the superintendency of the Arkansas State Hospital for Nervous Diseases, Little Rock.——Dr. Leonidas S. Brown, Water Valley, has been appointed health officer to succeed Dr. Hilton R. Carr, who resigned recently.

MISSOURI

St. Louis Medical Society.—At a meeting of the society, September 25, Sir Thomas Oliver, professor of medicine, University of Durham, England, gave an address on "Some Medical Observations on Industrial and Social Conditions in America."

Standard Sanitary Code Adopted.—Dr. Cortez E. Enloe, of the state board of health, has announced that the board has adopted the standard railway sanitary code of health of the American Railroad Association, and recommended the same to the railroad companies operating in Missouri. Twenty-three other states have adopted this code, which aims to protect the health of the traveling public and employees of the railroad.

NEBRASKA

Hospital Superintendents Appointed.—Dr. James A. Burford, assistant superintendent at the Nebraska Institution for the Feebleminded, Beatrice, has been appointed superintendent of the Nebraska State Sanatorium, Kearney, to succeed Dr. Lawrence T. Sidwell, who has accepted the position of superintendent at the Nebraska Institution for the Feebleminded, Beatrice, to succeed Dr. Samuel J. Stewart.

NEVADA

State Medical Meeting.—The twentieth annual meeting of the Nevada State Medical Association will be held at Reno, September 28-30, under the presidency of Dr. John LaRue Robinson, Reno. Dr. Ray Lyman Wilbur, San Francisco, President of the American Medical Association, will address the meeting. September 30 will be given over to a barbecue picnic.

NEW YORK

Personal.—Dr. Robert C. Woodman has been appointed superintendent of the Middletown State Homeopathic Hospital to succeed Dr. Maurice C. Ashley who resigned. Dr. Arthur S. Moore has been appointed first assistant physician.——Dr. Jonathan Pearson, Schenectady, has been appointed director of the division of tuberculosis of the state department of health.

"Well" Children to Be Examined.—The children's health consultations unit of the division of maternity, infancy and child hygiene of the state department of health are holding examinations of "well" children between the ages of 6 months and 6 years in Clinton County. The first examination was at

Ellenburg, September 5. Mothers were instructed concerning the value of proper diet, fresh air and hygienic living conditions. The family physician is at once notified of the findings at the examination.

Public Health Meeting.—A mass meeting pertaining to public health was held in New York, September 21, under the auspices of the National Health Council. Dr. Frank Vanderlip presided. Senator Copeland was the principal speaker. Dr. Livingston Farrand, president of Cornell University and head of the American Red Cross, spoke on the health examination campaign now being conducted throughout the country, and Honore Willslie, author, pointed out the health duty which the women of America owe to the nation. Organizations represented at the meeting included the American Child Health Association, American Public Health Association, American Red Cross, American Social Hygiene Association, American Society for the Control of Cancer, Conference of State and Provincial Health Authorities of North America, National Committee for Mental Hygiene, Life Extension Institute, National Organization for Public Health Nursing, National Tuberculosis Association, the U. S. Public Health Service and the American Medical Association.

New York City

Building Delayed.—Columbia University's $10,000,000 building program will be suspended because of the excessive building costs, it is reported.

Health Department Eye Clinics.—A recent survey of the work of the bureau of child hygiene of the department of health states that this bureau operated ten eye clinics which gave 85,000 treatments to 25,000 school children last year. This included 10,000 examinations and treatments at sight conservation clinics to candidates for sight conservation classes. In 1922, 36,000 refractions were performed by ten oculists, who wrote 11,000 prescriptions for glasses.

Decrease in New Health Budget.—The health department has asked for less money with which to run its affairs next year than it received this year. The amount allowed for 1923 was $5,474,483, while that for 1924 shows a reduction of $4,358. In its estimate, the health department asks for $4,281,384 for personal services. This is an increase of $23,320 over the present allowance. For other than personal service, the amount requested is $1,193,099, a decrease of $27,678. The tentative budget must be adopted before October 10.

Unsolved Hospital Problems.—In the annual report of the United Hospital Fund of New York, it is stated that there are more than 180 hospitals, containing 32,000 beds, in New York City. Twenty of these institutions are supported by the city; the rest are independent in their management, but are largely supported by voluntary gifts and legacies. All these hospitals are exempt from taxation on the ground that they promote the common good. If any hospital has a surplus at the end of the year, it is used to improve or to enlarge the service. Not less than $80,000,000 is invested in the land and buildings of New York hospitals, and it costs about $35,000,000 a year to run them. The following questions have been listed:

1. Does New York need more hospitals at present or not?
2. If needed, in what sections and for what service should new hospitals be started?
3. What can be done to insure a larger utilization both of the municipal and of the nonmunicipal hospitals?
4. What can be done to put hospital facilities within the reach of the middle-class which cannot pay private room rates and is unwilling to accept the free professional care of the wards?
5. Are more convalescent institutions needed to which hospital cases could be discharged earlier and cared for more cheaply, thus releasing hospital beds?
6. Would more visiting nurses and more home treatment be able to meet the wants at less cost of many who now are taken to hospitals?
7. Is the most crying need at present the improvement of outpatient service? Would such improvement benefit great numbers of incipient cases which are not now reached or properly handled, and thus save them from becoming hospital cases?

NORTH CAROLINA

Bill to Limit Drug Sales to Pharmacists.—The bill to limit the sale of medicines to drug stores will be reintroduced at the next session of the North Carolina general assembly, it was announced by J. G. Beard, professor of pharmacy at the University of North Carolina, before the members of the American Pharmaceutical Association, recently.

Baptist Hospital Opens.—A banquet was held, September 4, at the Baptist Hospital, Charlotte, at which 500 physicians and 300 Baptist ministers were present, preceding the official opening of the institution, October 1. The contract for the building of a 100-room annex to the present property of the hospital, which formerly was known as Tranquil Park Sanatorium, has been let, and construction work will start in the near future.

OHIO

Birth Records for School Children.—The school board of Akron has ruled that all children starting their first year in the public schools must submit their birth certificates. The city health department is cooperating with the city schools in issuing birth certificates, in which more than 100 errors have been found to date, it is stated.

Dr. Wilkes to Represent Commonwealth Fund Abroad.—With the return of Dr. Walter H. Brown, director of the child health demonstration, Mansfield, Dr. Leroy A. Wilkes, acting director, will leave for a three-year stay in Austria as representative of the Commonwealth Fund of New York. He will establish five health demonstrations in Austria which will be financed by the fund. During the first two years Austrian physicians will be sent to the United States to study the child health projects here and nurses will be sent to London to learn modern international methods of nursing. At the end of the two years these workers will return to Austria and assume control of the established and working demonstrations until they are completely taken over by the Austrian directors. Dr. Wilkes will leave for Austria, October 15.

Nursing School at Western Reserve University.—Miss Caroline E. Gray, professor of nursing education of Western Reserve University College for Women, has been elected dean of the newly endowed school of nursing to be known as the School of Nursing of Western Reserve University, Cleveland, which was established by a vote of the board of trustees, June 13, 1923. The new school is an outgrowth of the department of nursing education in the college for women and will be financed by a fund of $500,000 from Mrs. Chester C. Bolton of Cleveland. A five-year course for undergraduate nurses leading to the degree of bachelor of science will be offered. This will include two years at school, in both technical and academic studies; two years in one of the hospitals affiliated with the university, and a fifth year of special training along the line of the student's choice. At present three choices are open to the student: public health nursing, the teaching of nursing, and hospital administration. The second type of work includes the establishment of a preliminary course in the basic sciences in any of the hospitals connected with the university. This course is for those entering directly from high school. The work for graduate nurses will be organized by Miss Gray this fall.

OREGON

Appointments on Health Board.—Dr. Frederick D. Stricker, state health officer, has appointed Dr. Henry S. Capps, Portland, assistant state health officer, to succeed Dr. Andrew J. Warren of the International Health Board of the Rockefeller Foundation, who filled that position pending the regular appointment. Dr. William Levin, formerly bacteriologist for the New York State Department of Health, has been placed in charge of laboratory work for the board.

PENNSYLVANIA

Medical Meeting.—At the Crawford County Medical Society meeting, Saegerstown, September 12, Dr. Charles Gordon Heyd, New York, read a paper on "A Résumé of Our Clinical Knowledge of the Gallbladder, Stomach and Appendix." A committee was appointed to consider reorganizing the Northwestern Medical Association with the secretaries of the different county medical societies of northwestern Pennsylvania.

Philadelphia

Personal.—Dr. John W. Bransfield, formerly medical director of St. Agnes Hospital, Philadelphia, has been appointed clinical professor of surgery at the Woman's Medical College of Pennsylvania, Philadelphia, and a member of the surgical staff of the College Hospital.——Dr. William Cole Davis has been appointed medical director of the Philadelphia Hospital for Mental Diseases, Byberry, to fill the vacancy caused by the resignation of Dr. E. S. Blair, who has accepted the directorship of the Highland Hospital, Asheville, N. C.

Philadelphia College of Pharmacy and Science.—The free popular science lectures at the Philadelphia College of Pharmacy and Science will commence October 11. Fourteen lectures will be given. Among the speakers will be Dr. Henry

Leffmann, Dr. Horatio C. Wood, David Wilbur Horn, Ph.D., and George Rosengarten, Ph.D., all of the college.——The chair of biology and pharmacognosy, recently vacated by Prof. Heber W. Youngken, has been filled by the appointment of Arno Viehoever, Ph.D., lately of the U. S. Department of Agriculture, Bureau of Chemistry.

SOUTH CAROLINA

Hospital News.—A roentgen-ray and physiotherapy department was opened at the South Carolina Baptist Hospital, Columbia, August 15, with Drs. Arthur E. Shaw and Thomas A. Pitts in charge.——At a meeting of physicians interested in the Pryor Hospital and the Chester Sanatorium, Chester, September 6, it was decided to terminate the merger arrangement that has been in effect since May and operate the institutions separately as formerly (THE JOURNAL, May 26, p. 1528).

TENNESSEE

Commonwealth Fund Health Clinic.—Rutherford County has been chosen by the National Child Health Association as the rural community where a five-year health clinic will be conducted on about the same lines as the one in Georgia (this issue, p. 1118).

TEXAS

State President Entertained.—At a special meeting and banquet of the El Paso County Medical Society at El Paso, August 18, Dr. Arthur C. Scott, Temple, president of the State Medical Association of Texas, was the guest of honor. Dr. Scott spoke on "Certain Problems of the State Medical Association."

VERMONT

Personal.—Dr. William Lloyd Aycock, Burlington, connected with the research department of the Vermont State Board of Health, has been appointed associate professor of preventive medicine and hygiene at Harvard Medical School, Boston.

VIRGINIA

Richmond Academy of Medicine and Surgery.—At a meeting of the academy in 1922, it was announced that an anonymous friend had offered prizes of $100 and $50 for the two best original papers read before the academy during the year. A committee has made the awards to Dr. Joseph F. Geisinger for a paper on "Reduplication of the Ureter," and to Dr. Wyndham B. Blanton for a paper on "The Clinical Significance of Reductions in the White Cells of the Human Blood."

WISCONSIN

Health Board Cannot Close Schools.—According to an opinion by S. C. Siebold, assistant attorney general, to Dr. C. A. Harper, state health officer, the state board of health cannot condemn and close school buildings regardless of their condition. If, on examination, the board finds that a school building is a menace to the children, and the school authorities refuse to take action to better conditions, the state board of health is powerless to close the school, Mr. Siebold held.

PORTO RICO

Personal.—The *Bulletin* of the Porto Rico Medical Association states that Dr. Pedro N. Ortiz has been appointed director of the public health service of Porto Rico. He is to be assisted by the subdirector, Dr. Fernós Isern. Dr. Ruiz Nazario has been appointed assistant in the biologic laboratory of the service.——Dr. J. Avilés, now residing in New York, recently visited the island with the Veterans of Ohio party. He is the treasurer of the Porto Rico Medical Association.——Dr. Pedro Gutiérrez Igaravidez has returned to Porto Rico from a trip to the United States, as has also Dr. Mario Juliá, who has been investigating the latest methods for the care of mental disease.

CANADA

Tuberculosis Agencies in Canada.—In the new directory of Canadian agencies for the diagnosis and treatment of tuberculosis, there are included the following figures relative to the incidence of tuberculosis in Canada:

Total population of Canada (1921 census), 8,788,483.
Total population of the nine provinces of Canada, 8,755,853.
Total deaths from tuberculosis in the nine provinces of Canada, 1921, 7,694.
Approximate death rate from tuberculosis per hundred thousand, 1921, 87.
Total tuberculosis sanatorium beds, 4,103 (1923).
Beds per 10,000 people, 4.6.
Total Provincial Government grants for upkeep in 1922 covering 721,235 hospital days in 3,359 tuberculosis beds was $1,011,079.
Twenty-five sanatoriums report for 1922 a total of 1,016,774 days of treatment in 3,456 beds. The average per caput cost is $3.09 daily.

Similar information is given for each of the nine provinces, together with a list of the sanatoriums and clinics in each province.

Alberta Physicians and Surgeons.—The College of Physicians and Surgeons of the Province of Alberta in 1922 provided for an annual meeting of its members at which the president would review the work of the council and receive any comment or suggestions that members of the college might offer. At the meeting of the college in Calgary, September 6, contract practice, the workmen's compensation act, hospital interns and registration fees were discussed. A committee was appointed to investigate the question of using hospital interns (they are not used in western Canada) with the university, the Alberta Hospitals Association and the Medical Council of Canada. The council of the college agreed that pressure should be brought on the Medical Council of Canada to reduce the fees for registration from $100 to $25 to all members of the profession who were entitled to registration without examination by virtue of the ten years' practice clause. A physician who has his provincial license by examination is able to get a British registration for $25, which gives him access to every province in Canada, barring British Columbia, as well as other parts of the British empire. To obtain a Dominion of Canada license, which includes only Canada, a $100 fee is required.

GENERAL

American Receives Duncan Medal.—Dr. Edwin Peterson, Lieut. M. C., U. S. Navy, was awarded the Duncan medal of the London (England) School of Tropical Medicine, in July.

Medical Association of the Southwest.—The annual meeting of the association will be held in Kansas City, Mo., October 8-13, in conjunction with the annual fall clinical conference of the Kansas City Clinical Society.

New England Tuberculosis Conference.—The New England Tuberculosis Conference opened at Worcester, Mass., September 12, and continued at Rutland, Mass., September 13, on which day the anniversary of the establishment of the sanatorium at Rutland was celebrated.

National Fire Prevention Week.—The Chamber of Commerce of the United States has announced that October 7-13 will be National Fire Prevention Week. During the year, it is stated by the National Fire Protection Association, Boston, seventeen fires occurred in hospitals and allied institutions, fifty-three patients and employees were killed and the property loss was $1,614,000.

The Largest Universities.—The *American Educational Digest* states that the largest university in the United States in number of full-time students is the University of California, San Francisco, with 14,061, of which 249 are medical students; Columbia University, New York, is second, with 10,308, of which 381 are medical; the University of Illinois is third, with 9,285, of which 436 are medical; Michigan, fourth, 8,103, with 642 medical, and Minnesota, fifth, 8,586, with 474 medical.

Hospital Directory.—The National Tuberculosis Association has compiled a 126-page book containing a list of 662 sanatoriums, hospitals, day camps and preventoriums for the treatment of tuberculosis in the United States, together with a list of government hospitals in which special provision is made for tuberculous patients. The location, date of opening, capacity, rates and superintendent in charge are given in each case.

American Roentgen Ray Society.—At the twenty-fourth annual meeting of the society in Chicago, September 18-21, the following officers were elected for the ensuing year: president-elect, Dr. George Winslow Holmes, Boston; secretary, Dr. William W. Watkins, Phoenix, Ariz., and treasurer, Dr. William A. Evans, Detroit. The next annual meeting will be held in Boston, September, 1924. Dr. Hollis E. Potter, Chicago, was installed as president of the society for this year.

Dental Publication Will Elect New Board of Editors.—The work of editing the *Journal of Dental Research* will be wholly in the hands of the board of editors as soon as a self-supporting status has been attained. Editors of the journal in the future will be recurrently selected in recognition

of distinguished active service in the promotion of dental research and the sciences and arts on which dentistry is based. The present board of editors has sixty-eight members, which will be reduced to sixty, beginning with the volume to be issued in 1924.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons.—At the annual meeting of the association in Philadelphia, September 19-21, the following officers were elected for the ensuing year: president, Dr. James F. Baldwin, Columbus, Ohio; vice presidents, Drs. J. Wilson Poucher, Poughkeepsie, N. Y., and George C. Mosher, Kansas City, Mo.; secretary, Dr. James E. Davis, Detroit, and treasurer, Dr. William G. Dice, Toledo, Ohio. Drs. Frederick A. Cleland, Toronto, Ont., Canada; Walter T. Danreuther, New York; Foster S. Kellog, Boston, and Thew Wright, Buffalo, were made fellows of the association, bringing the membership up to 139.

Hygeia Praised.—While addressing the Michigan State Medical Society at its annual meeting, Grand Rapids, September 11-13, U. S. Senator Woodbridge N. Ferris, Big Rapids, Mich., said:

"I cannot leave the hall without emphasizing the idea I had about education. I want you to know what the teacher thinks about it. To my mind the one great thing that has come out in regard to education of the public is the new journal called *Hygeia*. I know you are familiar with it, but can't you do something to get this into the hands of teachers and brothers who know nothing about it? To my mind it is the greatest step forward that has been taken in the last twenty years. I know you all love that great journal, but let us help it by getting it into the hands of our fellow-workers."

Stricter Examinations of Aliens.—Stricter medical examinations for aliens entering the United States are recommended by Assistant Secretary of the Treasury Wadsworth, who, accompanied by Surg.-Gen. Hugh S. Cumming, has made an inspection of Ellis Island. The assistant secretary, who has charge of the U. S. Public Health Service, urged the application of an intensive examination of every immigrant rather than merely of those who, from a superficial examination, require a physical survey. He characterized the medical examination to be of vital importance to the country and said that the facilities at Ellis Island were inadequate. He proposed that the hospital at Ellis Island be improved; that additional housing space be made available, and that steamship companies be penalized for transporting to this country persons clearly barred by the law.

Society News.—The thirty-ninth annual convention of the Association of Official Agricultural Chemists will be held in Washington, D. C., November 19.——The eighth annual meeting of the Optical Society of America will be held at Cleveland, October 25-27. Prof. A. A. Michelson, head of the department of physics, University of Chicago, will read a paper on "The Limit of Accuracy in Optical Measurement."——At the seventy-first annual meeting of the American Pharmaceutical Association, the Ebert prize, in memory of the late Albert E. Ebert of Chicago, was awarded to Paul S. Pittenger, Philadelphia, for his paper on "Biological Standards of Local Anesthetics." Henry V. Arny, Ph.D., New York, was elected president of the association for the ensuing year. It was voted that the association affiliate with the International Pharmaceutical Federation. The 1924 meeting will be held at Buffalo.

The World's Dairy Congress.—Among the first representatives from foreign countries to arrive at Washington, D. C., to attend the World's Dairy Congress to be held, October 2, is Dr. A. J. Swaving of Holland. He is chief inspector of dairying, and chief of the division of the Ministry of the Interior of Holland. In discussing the inspection of milk in the United States, Dr. Swaving said that America has so many laws that it is difficult to enforce them, especially among farmers. "We, in Holland, do not have so many laws, but what we have are very stringent, especially as to the adulteration of milk." The government stamp is placed on every pound of cheese or butter sold in Holland, showing the purity and percentage of fat. Dr. Swaving brings proposals bearing on the commerce of dairying products of Norway, Denmark, Switzerland and Holland. The World's Dairy Congress was held in Brussels, in 1903; Paris, in 1905; the Hague, in 1907; Budapest, in 1909; Stockholm, in 1911; Berne, in 1914. The congress this year was scheduled for Copenhagen, but it was decided to hold it in the United States. Interests of world concern are to be discussed, and those who constitute the congress wished to have the force of the United States back of their projects. Besides the meetings of the congress in Washington, there will be meetings in Philadelphia, October 4, with dairy councils cooperating; and in Syracuse, N. Y., October 5-10, with the National Dairy Exposition cooperating.

Resolutions on Dangerous Drugs Traffic.—The text of three resolutions adopted by the Fifth Committee of the League of Nations at Geneva, dealing with the suppression of traffic in dangerous drugs, has been cabled to the state department at Washington by Representative Porter, the American delegate to the advisory committee. The resolutions are:

1. The assembly of the League of Nations expresses its deep appreciation for the very valuable work done by the advisory committee on traffic in opium and other dangerous drugs, adopts its reports and resolutions, taking note of the reservations contained therein, and asks the council to take the necessary steps to put these resolutions into effect.

2. The assembly approves the proposal of the advisory committee that the governments concerned should be invited to enter into negotiations with a view to the conclusion of an agreement as to a reduction of the amount of raw opium to be imported for the purpose of smoking into those territories where it is temporarily continued, and as to the measures which should be taken by the government of the Republic of China to bring about the suppression of the illegal production and use of opium in China, and requests the council to invite those governments to a conference for the purpose and to report to the council at the earliest possible date.

3. The assembly, having noted with satisfaction that in accordance with the hope expressed in the fourth resolution adopted by the assembly in 1922, the advisory committee has reported that the information now available makes it possible for the governments concerned to examine with a view to the conclusion of an agreement the question of the limitation of the amounts of morphin, heroin or cocain and their respective salts to be manufactured, of the limitation of the amounts of raw opium and the cocoa leaf to be imported for that purpose and for other medicinal and scientific purposes, and of the limitation of production of raw opium and the cocoa leaf for export to the amount required for such medicinal and scientific purposes, requests the council, as a means of giving effect to the principles submitted to the representatives of the United States of America, and the policy which the League, on the recommendation of the committee, had adopted, to invite the governments concerned for a conference for this purpose to be held, if possible, immediately after the conference mentioned in Resolution 1.

The assembly also suggests for the consideration of the council the advisability of enlarging this conference so as to include within its scope all countries which are members of the League of Nations or parties to the Convention of 1912, with a view to securing their adhesion to the principles that may be embodied in any agreement arrived at.

LATIN AMERICA

In Honor of Prof. Miguel Couto of Rio de Janeiro.—A committee composed of Professors Aloysio de Castro, Oswaldo de Oliveira, Henrique Duque, Moreira da Fonseca and Bastos Netto has been appointed to make arrangements for honoring Prof. Miguel Couto on his professional jubilee, October 25.

Research on Ticks in Mexico.—Dr. F. Ocaranza, the director of the division on parasitology of the Institute of Hygiene, Mexico, has requested scientists of the country to send him specimens of ticks. The classification of ticks found in various parts of Mexico will be part of the work of that institute during the coming year.

Personals.—Dr. Miguel A. Lengua has been appointed on the staff of the Caño de Loro Hospital, Cartagena, Colombia.——Dr. Antonio Diaz Granados has been appointed director general of public instruction of the district of Bolivar, Colombia.——Prof. Luis Patrón Rosano has been appointed president of the University of Cartagena, Colombia.——Dr. H. Roger, dean of the medical faculty of Paris, August 20, was the guest of honor at a reception given by the medical faculty of the University of Rio de Janeiro.——Dr. Desmarest, assistant professor of the medical faculty, Paris, is at present in Rio de Janeiro.——Dr. Carlos Chagas, director of the national department of public health, arrived in Rio de Janeiro, August 20, on his return from Europe.——Dr. A. Lustig, professor of pathology at Florence, and senator, arrived in Buenos Aires, August 16. This is his second visit to Argentina.——Dr. Sebastián Recasens, dean of the faculty of Madrid, who is in Argentina to lecture, is inviting Argentine and other South American physicians to take part in the Spanish-American medical congress which will be held in Seville, in October next year, under his presidency.

FOREIGN

The Jacksonian Prize.—The council of the Royal College of Surgeons of England has selected, as the subject for the Jacksonian Prize Essay for 1924, "The Pathology, Diagnosis and Treatment of Esophageal Obstruction."

Valuable Instruments Destroyed in Earthquake.—A dispatch from Tokyo states that the loss to Japanese science by the fire and earthquake is enormous. The collection of scientific instruments at the Imperial University was destroyed by the fire. It will take years to replace them.

Improved Living Conditions in Austria.—Our exchanges state that Austria's living conditions are reflected in the birth and death rates of the country. In 1919 the number of births reported was 110,822, as against 141,728 in 1921. The deaths in 1919 numbered 125,449, as against 104,599 in 1921.

Fellowship for Study of Radioactivity.—A society of Bologna has founded an endowment representing a stipend of 6,000 francs a year for an Italian student of physics and chemistry who desires to do research work in the Curie Laboratory, Paris. The fellowship is endowed for ten years.

Pneumonic Bubonic Plague in Russia.—Dr. Gaiski, director of the plague laboratory at Alexandrowgai, on a side-line from the main Astrakhan railroad, reports ninety-five deaths from pneumonic plague in the last few months in his district, the Kirghiz steppe. No case of plague has been reported from the German colonies on the Volga not far from this region.

Medical Representation in Ireland.—The elections in Ireland have resulted in the return of a larger number of medical men than ever before sat in the Dail. Among these are Sir James Craig, Dr. Myles Keogh and Dr. R. Hayes. The republican, or Sinn Fein, party contains five physicians—Drs. J. Crowley, P. McCarville, O'Byrne, J. Ryan and Kathleen Lynn. The last named is the first woman physician elected to any parliament in the British Islands.

The Policlinic, Vienna, Invites Danish Physicians.—Professor Mannaberg, medical director of the Policlinic, has invited three young Danish physicians to be the guests of that institution while studying in Vienna for one year from Oct. 1, 1923. The Danish committee has accepted the invitation, and Professor Rovsing is in charge of the matter. The invitation is an expression of gratitude to Danish physicians for their financial assistance to the Policlinic which rendered possible the heating of the institution last winter.

New Medical Colleges in India.—The new Lady Willingdon Medical School for Women, Madras, was recently opened by Lady Willingdon, who was received by the Surgeon-General and the Rajah of Panagal. Dr. Mary O'Brien Beadon is superintendent of the school.——The new medical college and King George's Hospital, Vizagapatam, India, was opened recently. During the opening ceremonies, the chief minister stated that there were only 20,000 medical practitioners in Madras, while there were more than 45,000 in England and Wales.

Typhoid in Tokyo.—According to a cable from Governor General Wood of the Philippine Islands, an epidemic of typhoid fever has broken out in Japan. Six emergency crematories have been established, and the cremation of victims of the earthquake and fire is proceeding day and night. Under the auspices of the American Red Cross, relief parties consisting of physicians and nurses have sailed for the earthquake zone, and subscriptions of nearly $8,000,000 have been collected for the relief of the Japanese. More medical and food supplies than are necessary for the current needs have already been supplied, it is announced.

International Relations Between Universities.—The subcommittee on international relations between universities met at Geneva, August 24, under the presidency of Mr. Bergueson. Its work commenced with an examination of Mr. Reynold's report on international exchanges of students and the standardization of studies and diplomas of universities. Mr. Reynold proposed an international university information bureau, to facilitate intercourse between existing university bureaus. The subcommittee also examined suggestions on international vacation courses and various other plans, among them the publication of a manual of history and a project for the foundation of an international university.

An Institute for the Study and Cure of Cancer in Madrid.—Under the direction of the national public health service and under the auspices of the Spanish Cancer Research Society, an institution has been opened for the study of cancer at Madrid. The clinical section includes twenty-eight beds, with rooms for operations and medical treatment, and a free outpatient service. There is a complete installation for radiotherapy and radiologic diagnosis. The section of anatomy, pathology and bacteriology includes several laboratories, as also the chemical section. The institution is mainly supported by the government, but part of the running expenses is paid by the patients and private donations. Dr. J. Goyanés is medical director.

Educational Number of British Medical Journal.—Listing the medical schools and hospitals of the British Isles, with descriptions of their activities, practically the entire September 1 number of the *British Medical Journal* is devoted to medical education. Sir George Newman, chief medical officer of the board of education and ministry of health, states that the medical curriculum in Great Britain, by a resolution of the General Medical Council, was completely revised in 1922, in such a way as to make it more preventive in purpose. The English, Irish and Scottish corporations are listed, as are also the medical degrees given and the fees charged for examinations. Graduate studies, tropical medicine, the facilities for women in medicine, the public health services and the army, navy and air forces are also cited.

Personal.—Dr. MacDonald Wilson, superintendent of the hospitals of Wellington, New Zealand, is touring the United States to get ideas for proposed hospital construction in Wellington. Dr. Wilson has visited Vancouver, Toronto, Montreal, Boston, New York, Cincinnati, Cleveland, Philadelphia, Baltimore and Chicago.——Dr. Clemens Pirquet, Vienna, will arrive at the University of Minnesota, Minneapolis, October 1, to take up his work as professor of pediatrics in the medical school.——Dr. Sarajam Khan, of the medical department of North West Frontier Province, Peshawar, India, and Capt. H. C. D. Mathur, Rajputana, are in this country to study methods that promote better health conditions among children. Dr. Khan is attending the Harvard School of Public Health, Boston, and Dr. Mathur is enrolled at the Johns Hopkins School of Public Health, Baltimore, under the auspices of the Indian government.——Dr. T. Duepetersen, Danish physician, has received official permission to wear the decoration of the order of the Crown of Siam.——Dr. Aage O. Wolff has been appointed roentgenologist at the Oresund and Sundby hospitals, Denmark.——Dr. Fibiger, Copenhagen, has been elected foreign honorary member of the Académie Royale de Médecine of Belgium.——Dr. Salvador Pascual, the noted urologist and writer of Madrid, will be the guest of honor at a public banquet, Sept. 9.——Dr. Gallástegui has been appointed surgeon of the Sociedad Filantrópica, Madrid.——Dr. Gimeno has by royal order been appointed delegate from Spain to the session of the League of Nations which opened in Geneva, Sept. 3, 1923.——Professor André, of Nancy, will preside at the Congress of Urology which will open in Paris, Oct. 4, 1923.——Dr. Calatayud Costa, professor of electrology and radiology of the University of Madrid, has been invited to lecture at the Battle Creek Sanitarium and at certain universities in this country.——Dr. Chagas, of Rio de Janeiro, has been elected foreign correspondent of the Académie Royale de Médecine of Belgium.——A bust of Dr. Martin Salazar, chief of the public health service in Spain, was recently unveiled in the Oza Sanatorium.——Prof. Charles Nicolle, chief of the Pasteur Institute, Tunis; Prof. Josef Kyrle, University of Vienna; Prof. Louis Bolk, director of the International Institute of Brain Research, Amsterdam; Dr. C. U. Ariens Kappers and Dr. Adrian de Kleijn, Utrecht, were elected foreign members of the Swedish Medical Association at the meeting, May 8, 1923.——Dr. P. Pampoukis has been elected president of the Medico-Surgical Society of Athens.

Deaths in Other Countries

Dr. **Alan E. Taylor,** former ophthalmogist to Leeds (Eng.) Infirmary; from heart disease.——Dr. **David Imrie,** resident medical officer, Western District Hospital, Glasgow, Scotland, was drowned, August 27.——Dr. **Ernest F. Bashford,** suddenly of heart disease, August 23, at Manderscheid, Eifel, Germany, aged 49. Dr. Bashford was formerly director of the Cancer Research Fund and made contributions on the zoologic and ethnologic distribution of cancer. He had served as assistant to Professor Liebreich in the Pharmacological Institute in Berlin; was an officer in the Royal Army Medical Corps during the World War, and until recently served with the army of occupation on the Rhine.——Dr. **Ramón Cañadas,** professor of dermatology at the medical school of Cadiz, connected with the University of Seville.——Dr. **Luigi Corti,** member of the Italian mission to Greece, that was massacred at Jannina. Major Corti had been a member of the international commission settling the boundaries of Albania.——Dr. **Arthur Souza** of S. Christovão, Brazil.——Dr. **Adriano Duque Estrada Azevedo,** sanitary inspector of the port of Rio de Janeiro.——Dr. **Juan Carlos Dighiero,** professor of clinical medicine at the University of Montevideo, president of the Sociedad de Medicina, aged 43.——Dr. **Francisco S. Soler,** dean of the profession in Argentina. Representative of Paraná in the national legislature.——Dr. **Luis A. Vila,** dean of the physicians of Rosario.——Dr. **Rafael Gonzales Pardo,** of Bogota, formerly secretary of the faculty of the national university.

Government Services

Addition to Hospital

Plans are being made for an addition to the Army and Navy General Hospital, Hot Springs, Ark. It will be of brick construction, with concrete and hardwood floors. The new institution will have a capacity for 206 patients.

Veterans' Bureau Helps Narcotic Forces

General Frank T. Hines, director of the U. S. Veterans' Bureau, has instructed all employees of the U. S. Veterans' Bureau to give every assistance to the narcotic forces of the government in running down members of "dope" gangs who are living off the compensation received by disabled ex-service men. During the last forty days more dope peddlers and dealers have been apprehended in the San Francisco district than during the previous six months, due to the cooperation of the officials of the Twelfth District of the U. S. Veterans' Bureau, according to the narcotic agent in charge of the California district. Since opening this drive in August, thirty-five peddlers, including four dealers, and more than $12,000 worth of narcotics, have been discovered. A dealer has been sentenced to seven years on McNeil's Island; two peddlers have been given smaller sentences, and thirty-seven cases are now on the docket with the accused either in jail or out on bonds ranging from $5,000 to $15,000. The medical personnel of the U. S. Veterans' Bureau, throughout the country, realizes that among its worst foes are those who sell narcotics to patients. There is probably no hospital in the country that has not its gang of "dope" peddlers and dealers, who can destroy months of medical treatment in a single day's contact with patients. The Veterans' Bureau officials are not duty-bound to assist the federal narcotic forces, but have undertaken to aid in the battle for health. The manager of the One Hundred and Twelfth District, U. S. Veterans' Bureau, believes that a moral obligation rests on officials of the bureau to protect ex-service people from "dope," regardless of whether they are in government hospitals, receiving vocational training or receiving compensation. It is our business, he said, to see that assistance provided by the taxpayer for disabled veterans is not appropriated by drug pedlers.

Budget Reduced

At a conference between the directors of the budget bureau, and of the Veterans' Bureau, at Washington, D. C., September 14, it was announced that the budget can be reduced between $40,000,000 and $50,000,000, instead of $25,500,000, as formerly announced. These additional reductions, it was stated, are possible because of the rehabilitation of World War veterans. The cost of the bureau for the last fiscal year was $461,000,000, of which $16,000,000 was returned to the treasury as savings. A committee of merchants of New York has voluntarily offered to assist Veterans' Bureau officials in selecting positions for veterans, and has spent fifteen thousand hours interviewing veterans, and advising them as to the pursuits which they are fitted to follow.——Bids were opened, September 17, for the construction of a mess hall, kitchen and nurses' quarters for the U. S. Veterans' Bureau Hospital at Rutland, Mass., at an estimated cost of $150,000.

Hospitalization of Veterans

The director of the Veterans' Bureau has announced that he will enlarge the membership of the Central Board of Appeals of the bureau by adding a specialist in neuropsychiatry and tuberculosis. The names of the additional members will be announced shortly. There are now 9,100 vacant beds in government hospitals, an indication that the need for additional hospitals has passed, and that with proper distribution of patients there is abundant provision for their care. An investigation disclosed that it costs the government $5.78 daily per man for general hospital treatment, $5.30 for tuberculous treatment and $3.75 for neuropsychiatric treatment. Of these amounts 53 cents is expended from every dollar for salaries, 27 cents for food, 7 cents for material and supplies and the remainder for such items as fuel, light and rent.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 10, 1923.

The Purity of Food

The existing laws for insuring the purity of food leave much to be desired. The ministry of health has appointed a departmental committee to inquire into the use of chemicals as preservatives and coloring matter. Adulteration for the purpose of making illegitimate profits developed with the growth of science until 1899, when it was checked by the Sale of Food and Drugs Act of 1899. This act prohibits the debasing of articles of food and the substitution of inferior for genuine commodities. Samples of food are purchased and examined by public analysts. Last year 113,860 samples were examined, and 7,106 of these were reported as not genuine or up to the standard. Thus, of 1,968 samples of vinegar examined, 110 were found adulterated. The adulteration consisted mainly of dilution and the substitution of acetic acid. But, though the act mentioned has been very successful in suppressing gross adulteration, it fails to protect the public against the abuse of preservatives. In a letter to the *Times*, Dr. James Oliver calls attention to the anomaly that, while cream containing boric acid or hydrogen peroxid as a preservative must bear, on the label, "Not suitable for invalids," butter containing boric acid can be sold without any such warning. Evidently invalids are supposed not to take butter. We have no general standards as regards the purity of food, such as exist in the United States. The result is that we suffer not only in regard to home produce but also in regard to the large supplies imported from that country. For the law of the United States extends to every country to which food is exported exactly the same protection concerning purity as its own citizens receive, but only provided that the food laws of the importing country are as rigidly enforced as are the federal food laws.

A Criticism of Vaccination

Dr. C. K. Millard, health officer for Leicester, occupies a peculiar position. He is the one well informed critic of vaccination in this country, and therefore a very different person from the ordinary antivaccinationist, who simply repeats over and over the same exploded fallacies. In an address delivered at the recent congress of the Institute of Public Health, entitled "Smallpox, Jenner and Vaccination," Dr. Millard exhausted his ingenuity in stating everything possible with regard to the limitations of vaccination. While admitting the greatness of Jenner's discovery, he considered that some of the claims put forward on behalf of vaccination were exaggerated, and to this he attributed much of the strength of the antivaccination movement. At the outset, Jenner fell into the error of supposing that the protection conferred by vaccination was lifelong—a natural mistake in the enthusiasm of such a great discovery. It has to be remembered that only recent vaccination can be relied on. In the Middlesborough outbreak of 1897, the proportion of unvaccinated persons in the population was only 2 per cent. Yet there was an outbreak of 1,411 cases, and 108 vaccinated persons died. The next exaggeration was the assertion that the whole of the great reduction in smallpox mortality is due to vaccination. But since the neglect of vaccination, the smallpox mortality per million has declined. Dr. Millard contends that vaccination only assisted a fall in mortality which has taken place in the case of other infectious diseases, and has been due to the same causes. A third exaggeration was in connection with the risk

which unvaccinated persons ran of contracting smallpox. Dr. Millard admitted that in the days of Jenner the risk was a real one. At that time no attempt was made to prevent the spread of infection by sanitation, including under that all the methods of modern preventive medicine. There was no notification, no isolation, no disinfection, no surveillance of contacts, and the standard of life among the poor was deplorably low. Today the position was entirely changed. Moreover, smallpox was now one of the rarest diseases instead of the commonest. Of course, if the disappearance of smallpox were due to vaccination, this would not be a valid argument—but was it? He did not think so, as smallpox and vaccination were simultaneously disappearing. But surely this acute critic has here tripped. All that can be said is that under modern hygiene plus help from vaccination the disease continues to decline. He seems to forget that, notwithstanding the widespread neglect of vaccination, the scare created by an outbreak leads, in the affected locality, to a large amount of vaccination not only of contacts but also of others, including antivaccinationists. Furthermore, the Augean task of converting a malady which was so common in the time of Jenner that nearly every one was attacked into a rare disease was brought about by vaccination long before the development of modern hygiene. His fourth example of exaggeration was that an unvaccinated person was a great danger to the community. He considered a vaccinated person whose vaccination had lapsed a greater danger because the vaccinated person was liable to contract smallpox in a modified form and to go about his business as usual with the disease unrecognized. What benefits the individual may be bad for the community. But surely the remedy for this evil is revaccination and better training in the art of diagnosis. One might similarly argue that the decline of smallpox brought about by vaccination was an evil because it prevented physicians from getting the necessary experience of the disease. This is undoubtedly true, for many outbreaks in recent years have not been recognized at the onset because of the physician's lack of experience. To the objection that slight cases of smallpox occur in unvaccinated persons, which the recent Gloucester epidemic illustrates, Dr. Millard replied that cases of naturally mild smallpox rarely, if ever, spread a fatal strain of the disease. On the other hand, a mild attack in a vaccinated person may mean a most virulent strain. Dr. Millard concluded with the suggestion that smallpox can be controlled without the universal vaccination of infants, who do not run a very serious risk as long as smallpox is kept reasonably under control. But vaccination applied discriminately, he considered, would ever remain of the utmost value. What exactly he meant by discriminately he did not define. It need scarcely be said that this ingenious pleading does not carry conviction among health officers. It certainly is cold comfort for the antivaccinationists, though they may make capital out of it by means of garbled extracts. It will serve a useful purpose if it teaches accuracy in the defense of vaccination.

The Sigma Reaction for Syphilis

In 1921, Professor Dreyer of Oxford and Dr. H. K. Ward described a flocculation test for syphilis which they termed the sigma reaction. They claimed that it was at least as sensitive and as trustworthy as the Wassermann reaction, and that it had the advantage over the latter in that it could be standardized and the results expressed in a definite unit system. The Medical Research Council has put these claims to the test by arranging for trials by workers who were kept in ignorance of the fact whether the samples of blood came from normal persons, from patients with syphilis or persons with other diseases. Their results were then compared with the clinical notes of those who took the blood samples. In a report just issued, these workers bear out the claims of Dreyer and Ward. The sigma test seldom or never gave a positive reaction in nonsyphilitic serums, while the Wassermann test occasionally did. The sigma reaction seems sufficiently accurate for all clinical purposes, and corresponds remarkably with the intensity of the clinical features. It provides a valuable method of determining the progress of a case under treatment and the effect of various remedies. But when large numbers of specimens had to be examined, the Wassermann test, as usually carried out, occupied less time. But if only a small number of serums had to be examined, the time occupied in making the sigma test was much reduced and was less than that required for the Wassermann test. Once the apparatus had been obtained, the sigma method was the more economical, since no purchase or upkeep of animals was necessary. Other advantages of the sigma test were that only two reagents had to be employed instead of five; that much information may be obtained by a quantitative expression of results, and that since the reagents can be standardized, comparable results can be obtained by different workers. A report is also submitted by Professor Dreyer, and Drs. Ward and James McIntosh and P. G. Fildes on comparison of the results obtained from the same serum. An approximately equal number of positive results were given by the two reactions in untreated cases of manifest syphilis, but in treated cases the sigma gave a larger number of reactions than the Wassermann test.

Outbreak of Smallpox in London

Following the serious Gloucester epidemic of smallpox, with outbreaks of the disease in other parts of the country, which have now subsided, the news of an outbreak in London has caused some disquietude. It corresponds closely in time with an outbreak last year. Since September 7, five cases have occurred in London. One patient, the first reported, is a woman who was employed at a hotel in the Strand. Her employment suggests the possibility of spread of the infection. A second case has occurred at the same hotel, and three other cases in various parts of London. Last year the outbreak was quickly stamped out by a vigorous vaccination campaign.

PARIS

(From Our Regular Correspondent)

Sept. 7, 1923.

A Charlatan's Advertisement Furthered by the Postal Authorities

In the United States, the Post Office Department forbids the use of the mails for fake advertisements, against which it employs the weapon known as the "fraud order." From a recent incident in France it would seem that the postal administration unwittingly favors the propagation of such advertisements. Dr. L. Cheinisse called attention recently in the *Presse médicale* to an advertisement of this nature emanating from an enterprise that bore the modest title "l'Institut Paris-France," which was displayed on the covers of stamp books sold by the postoffice. The postal authorities had sold the concession for the advertising and had retained no control whatever over the nature of the advertisements. Official carelessness of scandalous degree is certainly betrayed when a public administration thus promotes an enterprise that, under the false pretext of propagating "truths on public health questions," promotes the sale of a pseudomedical work bearing the suggestive title: "How to get cured."

The Twenty-Seventh Congress of Alienists and Neurologists

The twenty-seventh Congress of Alienists and Neurologists of France and French-speaking countries was held at Besan-

çon, August 2-7, under the chairmanship of Dr. Henri Colin, the successor of Magnan in the admission service of the Sainte-Anne Asylum, Paris. A large number of alienists, not only from France but also from Belgium, Luxemburg, Switzerland, Denmark, Spain and Poland participated. At this session, and possibly for the last time, by reason of the probable split in the congress (THE JOURNAL, Aug. 4, 1923, p. 403), in addition to a psychiatric subject (psychanalysis) and a medicolegal subject (criminal tendencies of drug addicts), the agenda of the congress included also a neurologic topic (nervous and circulatory affections caused by cervical ribs).

Psychanalysis, toward which French psychiatrists have always assumed a somewhat refractory attitude, awakened a lively discussion. A paper on the subject was presented by Dr. A. Hesnard, professor of the Ecole de médecine navale at Bordeaux, who, in collaboration with the late Professor Régis, published, in 1914, a book on psychanalysis in the neuroses and psychoses.

PSYCHANALYSIS

Professor Hesnard sought to evaluate the theory of psychanalysis from the etiologic, methodologic and therapeutic points of view.

Freud attributes neuroses and psychoses to sexual causes. Hesnard admits that some patients present symptoms that may properly be referred to the genital sphere: masturbation, lack of physical sexual gratification and perverse sexual instincts (auto-erotism or hetero-erotism). But these are the exception; in the majority of cases they are lacking. Asthenics are by no means all suffering from sexual debility. A great many persons suffer from anxieties or fears who do not lack normal sexual gratification. Most hysterics are not the subjects of thwarted sexual desires. Many psychopaths, whether they have passed the period of sexual activity or not, are no more affected by sex impulses than are many normal persons. The most frequent cause of these affections is some event in the patient's past life, which made a deep impression but which had no sexual bearing; for example, disappointed ambition, painful or incapacitating infirmity, poverty or financial ruin, misfortunes in the struggle for existence, and finally the deep emotions arising out of war conditions.

The question then arises: What is the practical value of psychanalysis? Its technic, it is true, is ingenious, but it presents many uncertainties, not so much because it has not been perfected, but because, in principle, it is open to mistakes, especially as regards the pansexual symbolism. It reveals complexes, the clinical nature of which is such that it is difficult or impossible to differentiate the pathologic from the normal. It often succeeds in unearthing emotions that are directly associated with organic life, which cannot be connected with any real mental or moral cause except on the assumption of a fantasy of consciousness on the part of the subject. Then again, it can never be more than a supplementary means of exploration, never constantly indicated nor in any wise sufficient for diagnosis.

On the other hand, it may, at times, even be dangerous. It may favor or consolidate the development of symptoms of hysteria or of other affections in weakminded persons who are already disoriented in their imaginations. It may suggest ideas of unworthiness to those who are already potentially self-accusatory. It may exaggerate the doubts and fears of persons suffering from obsessions, and lead to excitement in subjects previously calm and resigned. It would be particularly dangerous to allow teachers and other nonmedical advisers to meddle with the plastic and uncontaminated moral nature of adolescents. Hesnard even supports the view that the practice of psychanalysis must eventually claim the attention of legislators for the protection of public health.

Finally, as to the therapeutic value of psychanalysis, it was emphasized that the examples of really indisputable cures that have been published concern only special cases, the etiology of which is truly sexual in the common and restricted sense of the term or which are predominantly psychogenic. Psychanalysis has failed utterly in the numerous cases in which an organic basis or factor (alcohol, a persistent infection, traumatism, arteriosclerosis, endocrine affections) was involved. The same is true of the periodic neuropsychopathic affections, which may disappear suddenly at any time, within the space of a few hours, after the "analysis" has long since been abandoned. In the end, it will be found that, when psychanalysis has produced results, the method employed was not essentially different from other psychotherapeutic methods; it appealed to the emotions, inspired confidence, took advantage of suggestibility, and awakened the interest of the patient in realities.

To sum up, Hesnard holds that psychanalysis, being exaggerated or erroneous in all its aspects, should be retained only as a type or specimen, still awaiting perfection, of the methods employable in psychologic investigation, which purposes to discover, through exploration of the intimate relationships of the patient's past life, the emotional causes of psychoneuroses.

During the discussion of this paper, two distinct tendencies could be noted. The Swiss alienists defended vigorously Freud's theory, whereas the French alienists, for the most part, rallied to the support of the writer.

Dr. Schnyder of Bern declared that the theory of psychanalysis, deprived of its excrescences, deserves to be retained, and that it constitutes a legitimate part of psychiatry and clinical psychology. As for its therapeutic application, it should not be regarded as the sole remedy; a large rôle must be left to integrative psychotherapy.

Dr. Boven of Lausanne protested against the term "visionary" as applied to Freud by the author. Freud, he maintained, is not a dreamer; quite the contrary, he is the possessor of a well balanced and scientific mind. It is a misconception to repeat continually that freudism is exclusively sexual. Its founder readily admits the influence of predisposition, along with causes of a sexual nature. As for repression in the symbolic mechanism of the dream, Freud is dealing with realities and not mere fantasies, as Hesnard would have us believe. Dr. de Saussure of Geneva called attention to Freud's recognition of the rôle of egocentricity in association with that of sexuality (libido). According to Dr. Répond of Lausanne, we should be familiar with the pansexualism of Freud, even though we do not accept it. In schizophrenia, he stated, by means of psychanalysis it is possible to comprehend the psychogenesis of mental upsets, archaic symbolism and neologisms, and thus to shorten the stay of patients in psychopathic hospitals. Even from the therapeutic point of view, Répond holds that psychanalysis renders good service if applied according to the views of Bleuler.

Dr. Minkowski of Paris stressed the need of distinguishing between freudism and the Zurich school. Freud took as his point of departure the analysis of neuroses; Bleuler, the study of dementia praecox. Bleuler approaches more and more the classic French school in the importance he ascribes to the idea of the constitution. Dr. Logre (Paris) and Dr. Hartenberg (Paris) accused the freudians of resting content with approximations. In Hartenberg's opinion, the freudian theories are inexact, not only as regards the sexual etiology of psychoneuroses but also with respect to the analysis of

dreams, the study of associations, the mechanism of repression and psychanalytic therapy.

Professor Lépine, dean of the medical faculty of the University of Lyons, who in 1913 organized a course of instruction in psychanalysis, is of the opinion that, properly managed, psychanalysis will furnish valuable information in diagnosis. Dr. Laignel-Lavastine, an agrégé professor of the Faculté de médecine of Paris, holds that Freud is entitled to the merit of discovering a method for sounding the depths of the unconscious, and that this method is of considerable value for the analysis of the psychoneuroses. Unfortunately, in its applications Freud betrays a lack of critical insight, accepting as truth gossip, superficial observations and many exaggerations of his original idea. As Laignel-Lavastine views it, freudism is a metaphysical doctrine based on an exaggeration of the influence of libido on the human mind. The question naturally arises why this doctrine has been so widely accepted in Anglo-Saxon countries and encounters so much resistance in Latin countries. Laignel-Lavastine thinks this is because the Latins are more realistic, less mystical, and also because the dominant religion is Roman catholicism, the confessional serving as an outlet, as it were, for unhealthy thoughts. The very defects of freudism: unbridled sensuality and mysticism, have been the cause of its success. It would be well to distinguish between freudians who are direct scientific disciples of Freud, and incompetent propagandists of the excesses of freudian psychology—for the most part not members of the medical profession, but rather popular writers, teachers, masseurs, and others, whose influence on this matter with the public at large should be combated as dangerous. Hartenberg and Logre emphasized also the dangers that would result from the dissemination of freudian theories among the public at large. Logre views this as a real social menace, for psychanalysis, by revealing to the patient sexual motifs tending to cause conjugal disharmony, is likely to break up families.

The Shortage of Nurses

In the *Concours médical*, Dr. J. Noir notes with regret that, in France, physicians, and more particularly surgeons, are obliged to secure foreign nurses for their clinics or sanatoriums. He cites the instance of a surgeon to the hospitals of Paris who recently had great difficulty in obtaining a satisfactory personnel for his surgical service, and was obliged to send to England for a head nurse whom he could trust to sterilize his instruments and manage the operating room.

Experience has shown that persons with mediocre education are not qualified for the profession of nursing. It requires intelligence combined with high ideals. It is because French nurses, or, rather, French would-be nurses, too often lack these qualifications that medical practitioners have opposed the idea of collaboration with nurses. Noir urges practitioners to send their daughters, relatives, and other young women in whom they are interested, to well equipped training schools for nurses. In this way, he thinks, it will be possible to introduce among nurses a feeling of respect for the physician, a willingness to follow his directions, and the discretion that is necessary for good nursing.

Prevention of Infection from Oysters

In order to protect the public against infection from eating contaminated oysters, the president of the republic, at the instance of M. Paul Strauss, minister of health, has issued an order regulating production, transportation, sale and importation of oysters designed for human consumption. This order specifies that henceforth only oyster establishments that furnish evidence of being in a sanitary condition will be permitted to sell oysters for human consumption. Such establishments will be inspected periodically. The order prohibits specifically methods of handling that are liable to cause contamination; for example: (1) flushing or washing oysters with impure sea water, such as the water of harbors, or with nonpotable sweet water, such as that of rivers, canals, or small streams into which sewage is emptied; (2) conservation or freshening with ice unfit for consumption; (3) storage in boxes, sacks or baskets immersed near wharves or piers where the oysters are subject to contamination; (4) the washing of open oysters in any manner; (5) opening oysters with unclean instruments, and (6) preservation in impure water after removal from the shells.

MEXICO CITY

(From Our Regular Correspondent)

Sept. 2, 1923.

Health Week

In connection with the celebration of national independence during the present month, the department of public health has organized a health week. This will be observed throughout the country by popular lecturers on pressing health problems of individual and public bearing, such as birth registration, smallpox vaccination and revaccination, the proper feeding of children and of adults, the safety of water supplies, and the campaign against flies, mosquitoes, lice, fleas and other disease-bearing insects. In addition to the lectures, public parades will be held wherever possible. Several state governors have offered to cooperate in order to make the health week a success in their respective jurisdictions.

American Visitor

After spending a fortnight in Mexico, Dr. F. F. Russell of the Rockefeller Foundation has left for New York. While here Dr. Russell first visited the cities of Tampico and Vera Cruz to inspect the yellow fever work carried on since 1921 by the International Health Board in cooperation with the Mexican health authorities. During his stay in Mexico City, he visited the several departments of the health department and was granted an audience by the president. At a medical meeting, Dr. Russell emphasized the advantages of international cooperation in health matters and stated his belief that health workers should keep aloof from politics, since the best sanitarians are often the poorest politicians, and vice versa. An agreement was apparently reached between Mexican authorities and Dr. Russell, to the effect that when yellow fever work has come to an end there shall be started a campaign against hookworm disease, in accordance with the same cooperative plan now existing. An effort will also be made to increase the number of Mexican physicians now granted postgraduate fellowships in the United States by the Rockefeller Foundation. Dr. Russell was accompanied by his secretary, Dr. Alan Gregg.

New Head of the Medical School

To fill the vacancy created by the resignation of the former incumbent, Dr. Gea González, professor of clinical surgery, has been appointed dean of the medical school. A minority of the students, apparently displeased at the change, tried to have the former dean reinstated, and after failing in this have started a series of attacks against the secretary of education in a journal controlled by them.

Personal

The new rector of the National University is Mr. E. A. Chávez, M.A. He was undersecretary of education under Sierra, and one of his first actions on assuming charge of his new post was a visit to the medical school.——Dr. E. Orvañanos, an ophthalmologist, has been sent to Washington on a special mission by the department of public health.——Dr. R. Granillo, a former pupil of Harvard School of Public

Health, has been appointed an instructor in the Army Medical School.——Dr. J. Velázquez Uriarte, a gynecologist, has returned from a trip to Europe and the United States.——Dr. R. Tapia Hernandez has left for Switzerland.——Dr. F. Echevarriá, formerly of El Oro, has been appointed a member of the superior board of health and placed in charge of the yellow fever and malaria work.

BERLIN

(From Our Regular Correspondent)

Sept. 8, 1923.

Economics, Medical Work and Medical Journals

Thanks to the prolonged and terrible disorganization of the economic situation, medical science, public health administration, social insurance and the work of the medical profession in Germany have been steadily deteriorating. An emergency commission of German scientists, established several years ago, recently had to announce that, in spite of the increase of their funds to 900 billion paper marks by the reichstag, the possibility of supporting scientific enterprises and especially publications has gradually decreased. As short a time as ten days ago the printing of one sheet of scientific literature cost more than 270 million paper marks. The price of paper had then been increased 50 per cent. over the peace price reckoned in gold. The price of printing had been doubled. Since then prices have gone steadily upward. The number of scientific periodicals, consequently, has decreased steadily, and it has been impossible to complete compilations that had been started. Medical science suffers particularly because expensive apparatus and laboratory equipment are of special importance. In the middle of August a good microscope cost six billion paper marks; an incubator or a good galvanometer, one billion paper marks. Roentgen-ray apparatus is hardly obtainable any more by the private physician. The Berlin Medical Society has announced that for the present it must close its library because it can no longer pay the salaries of employees and the cost of binding, although the assessments against members, in paper marks, have been steadily increased. The number of meetings of the medical societies has also been curtailed, if only for the reason that a street car ride at this time costs 100,000 paper marks. Meetings of scientific societies are no longer possible on account of the high railroad fares and enormous hotel rates. Meetings of the National Medical Society have been discontinued. The German dental society, with its clinic, laboratory and graduate school, is forced to close on the first of September. The most lamentable thing is that our greatest medical weeklies are affected by these conditions. Although the subscription price in August was 150,000 marks, yet the publishers of four weeklies of Berlin and Munich have been compelled to suspend publication temporarily. It is to be hoped that it will be possible to lower the demands of the printers sufficiently to end this strike of the publishers, and that the medical weeklies, which are indispensable for medical progress, can again appear even if the size of the journals is diminished. A reduction in size is a small evil, for overproduction in medical contributions has always been large and, in spite of many attempts on the part of the university professors and editors of the periodicals, it has been difficult to limit their number.

But the physical nutrition of physicians has suffered far more from the financial misery than has their mental nutrition from the temporary suspension of the weeklies. Industrial physicians in particular, who form the largest proportion of German practitioners, are hit by difficulties due to the delayed payments in private and industrial practice. Several days ago the directors of the Leipzig association published a declaration which states that "industrial physicians, in consequence of delayed payment of their fees, are barely able to exist. Many physicians have already found themselves compelled to refuse credit to sick benefit societies and to treat the members of these societies only for cash payment, which means a cessation of their contracts. . . . The medical profession demands immediate governmental regulation and legislation in favor of the industrial benefit societies, which are in such great difficulties. If the inability of the industrial benefit societies to pay is not lessened in the immediate future, the entire medical profession will no longer be able to cooperate in sick insurance, and a total breakdown of social institutions will then be inevitable."

At a mass meeting of the physicians of Munich, it was established that the cost of necessaries was 436,935 times as great as the prewar price, while the "high price" bonus granted by the Prussian government to physicians is only 80,000 times as great. In the concluding sentence of their resolution there is even expressed a threat that in case there is no change in the regulation of fees the "physicians of Munich will not hesitate to use, as a means of desperation, a general strike." Things have indeed gone far when the German medical profession, which has always been distinguished for its idealism, is driven even to express such a threat.

Pharmacists have recently taken the same attitude as the physicians toward the sick benefit societies. Their resolutions state that since the sick benefit societies are unable to pay, the majority of pharmacists are in danger of ruin; in consequence, if this condition continues, they will be compelled to suspend their contracts with the sick societies and to furnish medicines only for cash. In the face of this threat, the treasury department has succeeded in bringing about a temporary agreement. The sick benefit societies have made a monetary advance to the pharmacists with which to renew their stocks, and have further assured them that they will pay the amounts due for medicines more promptly than heretofore.

To complete this sad chronicle, I must report that the existence of private clinics and charity hospitals is also endangered. Many are already closed. In the year 1922, in Prussia, twenty-two public hospitals with 934 beds, and twenty-three private hospitals with 1,525 beds were closed. This number has been increased considerably in the year 1923. All the private bath houses in Prussia with one exception have been closed. It is reported that the same fate has overtaken about 90 per cent. of all private bath establishments in Germany. This is easily understood when one realizes that a simple tub bath at this time costs about three quarters of a million marks.

Marriages Between Blood Relatives

Our present law permits marriage between cousins, uncles and nieces and nephews and aunts, and in Prussia every year a considerable number of marriages between close relatives are consummated. In consequence of the medical objections to this practice, the proportion of such marriages is steadily decreasing. The highest number was reached in 1877, when they constituted 9.47 per cent. of all marriages, while in the years 1914 to 1922 the average was 3.13 per cent. The great majority were marriages between cousins. Marriages between uncle and niece constituted 7.42 per cent., while those between nephew and aunt were only 1.48 per cent., the difference being due to the fact that women seldom marry men younger than themselves.

Death of Professor Rumpel

Several days ago, Professor Rumpel, director of the Barmbecker Hospital in Hamburg, died after a long illness, at

the age of 61. In 1888 he became assistant physician, later associate physician in the Eppendorfer Hospital. He achieved a considerable reputation in 1892 during the epidemic of cholera. Later he was entrusted by the senate of Hamburg with the establishment of the Barmbecker Hospital which, under his direction, has become distinguished. Rumpel has published works worthy of recognition in different fields of internal medicine, but especially in the field of infectious diseases.

Relaxation in the Campaign Against Tuberculosis

The German Executive Committee for Combating Tuberculosis met this year, May 12, in Berlin. The transactions and discussions, unfortunately, did not give an encouraging picture of the present status of the crusade against tuberculosis. What had been laboriously built up during the decades of hygienic progress preceding the war had been thrown down during the great conflict, and what has been accomplished during the few years since the close of the war is now being undermined by economic conditions.

In his opening address, Bumm of the Central Health Bureau, the chairman of the executive committee, gave the most recent statistics on tuberculosis, extending into the year 1923. In German cities with more than 100,000 inhabitants, the mortality rate from tuberculosis during the first quarter of 1921 was 18.0 per 10,000 population; in 1922, 18.2; in 1923, 20.8. The comparatively large proportion of children under 15 years of age is disquieting. In the children's clinic of Berlin University, Czerny observed an appalling increase in grave hemoptysis, which became common during the war years. Often infants are now brought to the clinic that have become so weakened through lack of food that they can no longer be saved. Under the increased economic pressure, the health of the whole people is deteriorating. Many of those affected were formerly in fairly good financial circumstances and had no occasion to accept charity; many whose earning capacity under normal conditions would still be good are unable to provide adequately for themselves and their families; but the distress of those without income and of those who, on account of age or sickness, are unable to obtain employment is beginning to appear catastrophic. In spite of the many sacrifices of time and energy by physicians, nurses and others, who take part in the welfare work for the tuberculous, tuberculosis is increasing rapidly. The consultation rooms of the welfare centers are filled with suppliants. The tuberculosis mortality curve is again showing an upward trend, especially in the large cities. Reports from welfare centers refer to the increased incidence and grave course of tuberculous affections. The executive committee has been hampered during the past year in its work, and, until more ample funds can be secured, will be obliged to limit its activities to the most pressing needs. It is hoped, by such curtailment, to prevent the tuberculosis crusade from becoming a dead letter. The funds of the executive committee are at present derived mainly from government appropriations, and include certain allowances from the sum realized from the brandy monopoly and concessions from the federal assurance institute for employees.

A New Federal Law to Check the Abuse of Alcohol

The new federal law against the abuse of alcohol has some effective and welcome features. Before a license is granted for a bar in an inn or a retail liquor store, the question is to be raised whether the number of such places is not already sufficient. The requirements as to the character of the petitioner and the nature and purpose of the rooms have been made much more strict, while the application of the law is extended to include "closed societies" and other clubs. The authorities in each legislative district must issue regulations concerning the hour for closing, which shall apply equally to closed societies and to hotels if there is a bar in connection.

According to the Prussian regulations, as contained in the federal law, guests as well as the proprietor are punishable if the hour for closing, which is midnight, is not rigorously observed. The regulations for all bars within a definite communal district shall be uniform. Furthermore, the authorities having jurisdiction may forcibly close a bar or retail liquor store if it was opened without license or if the license has expired or has been rescinded. If the character of the proprietor is questionable, the operation of his establishment may, at once, be suspended. Of especial importance, though not entirely satisfactory for public health and the common welfare, nor to the peremptory demands of organizations for the protection of juveniles, are the regulations with regard to minors: (1) prohibition of the sale of spirituous liquors or of any article of food containing them to persons under 18 years of age; (2) prohibition of the sale of other alcoholic beverages and tobacco to persons under 16 years of age, unless accompanied by a parent or guardian or his representative. The sale of alcoholic beverages to intoxicated persons is also prohibited. A further section of the law gives to the highest state authorities the power to confiscate rooms or apartments used contrary to law, including rooms of inns, saloons and retail liquor shops, in case it is found necessary to close them or they are needed for residential or industrial purposes. These regulations, if rigorously enforced, will help greatly in the crusade against alcohol, until the bar reform law, which has been under consideration for many years and the draft of which was recently submitted to the reichstag, is passed; this law will, it is hoped, impose other even more radical provisions.

Statistics on Rickets

Wimmenauer, in the *Zeitschrift für Schulgesundheitspflege*, says the reason why the statistics on rickets are not more complete is that rickets is typically a disease of early childhood, and that health and welfare work among young children is still very poorly developed. Then again, there is a lack of uniformity in the methods of investigation, for which reason the reports of school physicians on the incidence of rickets cannot be compared one with another. It is essential that an understanding be reached in regard to the methods of investigation to be employed under given conditions. In children of school age the acute affection has usually subsided, but signs are still present in the bony framework, which the statistician is under obligations to report in detail. Of the signs of previous rickets, the most significant are changes of the thorax, the skull and the spinal column (main symptoms), and secondarily, changes of the spinal column and the jaws (associated symptoms), which serve to divide cases of rickets, according to the degree of severity, into three different groups. By applying the method that has been in use in Mannheim for many years, Wimmenauer reaches the following conclusions: Among the beginners in school in Mannheim in 1913, 64.1 per cent. of the boys and 47.0 per cent. of the girls showed signs of previous rickets. About two thirds of the cases were of the milder type. Changes of the thorax were the most frequent symptoms. Retarded development in rachitic children furnishes evidence that rickets is a general and not a local affection. In Offenbach, in 1921-1922, in children under 1 year of age, symptoms of previous rickets could be noted in 40.3 per cent. of the boys and in 37.0 per cent. of the girls. These are much higher figures than have usually been recorded in school statistics. The number and severity of the affections decrease as one

proceeds from the center of the town toward the outskirts, since in the outlying districts the general conditions of hygiene are better. From this it may be concluded that rickets is a degenerative disease. It was noticeable that the boys were more susceptible to rickets than the girls, and that the signs of rickets tend to disappear as the children grow up. He states that an increase of rickets as a consequence of the war could not be proved.

Age Distribution of Prussia's Population

The number of children in the 0-15 age group, in 1910, amounted to 35 per cent. of the population. In 1920 this percentage had decreased to 29, in spite of the loss of men in the war. The number of men in the 20-50 age group was, in 1913, almost 8,500,000, but in 1920 only 7,700,000. The number of children in the 6-15 age group fell from 5,100,000 to 2,770,000. If this rate of decrease continues, five years from now, the percentage of children in the 0-15 age group will scarcely exceed 20, and will doubtless fall below 20 during the years following. On the contrary, as compared with 1917 and 1920, the mortality of children under 6 and of school children has risen for both sexes, and measurements of school children and of minors who have left school prove that there has been a downward trend of bodily health.

The Seventieth Birthday of Albrecht Kossel

Albrecht Kossel, physiologist of the University of Heidelberg, celebrates, September 16, his seventieth birthday. He was a pupil of Hoppe-Seyler and, as his assistant, became an instructor in the University of Strasbourg, in 1881. In 1883 he became the head of the department of physiologic chemistry in the Berlin Physiological Institute, under du Bois-Reymond. He was soon called to a professorial chair in Marburg, and in 1901 he removed to Heidelberg, where he became the successor of Kühne. His principal publications are in the field of cell research. His researches laid the foundation for our knowledge of the chemistry of nucleic acids and cleavage products, and led to exact researches on the protein bodies of the spermatozoa of fish. Through his investigations, the nature of the protein molecule was revealed. It is impossible to mention here all his publications bearing on these subjects. In recognition of his work he has been granted an honorary degree by the universities of Cambridge, Edinburgh, Dublin, Greifswald and Geneva; in 1910 he received the Nobel prize for medicine. He retired from his duties this year by superannuation. He still remains, however, the director of the institute for research on proteins, which was established at his instigation.

Marriages

JOSEPH ALOYSIUS CONATY, Jr., Los Angeles, to Miss Grace Ranken of San Francisco, June 20.

WALTER JAMES DOWSWELL, Benson, Minn., to Miss Lucille Murphy of Fargo, N. D., recently.

ALFRED B. PEACOCK, Marshfield, Ore., to Miss Anita Schussler of San Diego, Calif., July 14.

DANIEL L. HOLLIS, Panuca, Mexico, to Miss Vola Cummings of Mexico City, June 12.

BENJAMIN FRANKLIN ROYER to Miss Jessie Leona Ross, both of Halifax, N. S., July 19.

EDWARD G. JOSEPH, Rochester, Minn., to Miss Louise Fineman of Minneapolis, July 23.

LUCY DAVIS CRIPPS to Sir Richard Hopkins, both of London, England, recently.

HARRY E. MIDDLETON to Miss Florence Rose, both of Alton, Ill., July 10.

Deaths

Edward William Ryan, Jessup, Pa.; Fordham University School of Medicine, New York, 1912; died, at Teheran, Persia, September 19, of heart disease following malaria, aged 39. Dr. Ryan had served with the American Red Cross in Russia, Serbia and Persia, since 1914. He was a chevalier of the Legion of Honor and had been decorated by Serbia and Montenegro for work in combating typhus fever in those countries.

Frederick Randolph Bailey ● Elizabeth, N. J.; College of Physicians and Surgeons in the City of New York, 1895; formerly instructor in histology of the nervous system, and since 1904 adjunct professor of histology and embryology, at his alma mater; member of the New York Pathological Society; at one time on the staff of the Elizabeth General Hospital; aged 52; died, September 16, following a long illness.

Augustus McShane, New Orleans; Medical Department University of Louisiana, New Orleans, 1882; formerly instructor in hygiene, tropical medicine, otology, rhinology and laryngology at Tulane University of Louisiana School of Medicine; a founder of the New Orleans Polyclinic; on the staff of the Eye, Ear, Nose and Throat Hospital for twelve years; aged 62; died, September 14, following a long illness.

Frank Wallace Patch, Boston; Boston University School of Medicine, 1888; formerly professor of materia medica at his alma mater; member of the New England Society of Psychiatry; proprietor of the Woodside Cottages Sanatorium, Framingham, and consultant to the Westboro State Hospital, Westboro; president of the Framingham Improvement Association; aged 61; died, September 7.

Saxe Whittier Mowers, Tacoma, Wash.; University of Michigan Medical School, Ann Arbor, 1896; member of the Brooklyn Gynecological Society, the Chicago Gynecological Society and past president of the Washington State Medical Association; formerly on the staff of the Northern Pacific Hospital; aged 53; died, September 7, of cerebral hemorrhage.

Gordon Bell, Winnipeg, Manit., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1890; member of the American Association of Pathologists and Bacteriologists; professor of bacteriology and hygiene at his alma mater; chairman of the Provincial Board of Health; aged 60; died, August 8.

Edward Leroy Napier ● Major, M. C., U. S. Army, Dayton, Ohio; Medical Department of the Tulane University of Louisiana, New Orleans, 1906; flight surgeon at McCook Field; aged 40; was instantly killed, September 15, when the plane he was driving fell from an altitude of 1,500 feet.

Mary Pierson Eddy, Beirut, Syria; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1893; for many years a medical missionary in Syria; formerly a practitioner in Florida; aged 59; died, September 11.

Frederick Ward Seymour, Rochester, N. Y.; Medical School of Harvard University, Boston, 1904; served in the M. C., U. S. Army, during the World War; on the staff of the Rochester General Hospital; aged 43; died suddenly, September 6.

James M. Workman ● Woodward, Okla.; Missouri Medical College, St. Louis, 1879; formerly mayor of Woodward; founder and several times president of the Woodward County Medical Society; aged 66; died, August 26, of carcinoma of the liver.

James P. Taugher ● Milwaukee; Northwestern University Medical School, Chicago, 1893; on the staff of the Trinity Hospital; aged 61; died, September 8, of injuries received when the automobile in which he was driving was struck by a train.

Corydon Revilla Enslow ● Huntington, W. Va.; Medical College of Ohio, Cincinnati, 1877; formerly served as mayor of Huntington; on the staff of the Chesapeake and Ohio Hospital; aged 69; died suddenly, September 2, of heart disease.

Thomas Israel Fox, Franklinville, N. C.; Vanderbilt University Medical Department, Nashville, Tenn., 1894; member of the Medical Society of the State of North Carolina; aged 57; died, September 3, of cerebral hemorrhage.

John Eddy Haskell ● Chicago; College of Physicians and Surgeons, Chicago, 1903; formerly instructor in materia

medica at the University of Illinois College of Medicine; aged 48; died, September 16, of cerebral hemorrhage.

Mary Ann Willard, Mannville, Fla.; New York Medical College and Hospital for Women, New York, 1883; formerly on the staff of the Grace Hospital, Detroit; aged 81; died, July 25, of pulmonary tuberculosis.

Simeon Jerome Wilson, Oneida, N. Y.; Medical Department of the University of the City of New York, 1880; member of the Medical Society of the State of New York; aged 67; died, September 11, of paralysis.

George A. Kerling, Pennsburg, Pa.; Jefferson Medical College of Philadelphia, 1887; member of the Medical Society of the State of Pennsylvania; aged 59; died suddenly, August 17, of cerebral hemorrhage.

Oliver P. Daly, Sr., Shuteston, La.; Medical Department University of Louisiana, New Orleans, 1881; formerly president of the school board; aged 61; died, September 12, in New Orleans.

Walter R. Dashiell ● Mission, Texas; Pulte Medical College, Cincinnati, 1895; formerly assistant surgeon in the U. S. Public Health Service; aged 49; died recently, following a long illness.

Everett M. Bowker, Brookline, Mass.; Medical School of Harvard University, Boston, 1891; member of the Massachusetts Medical Society; aged 57; died, September 8, of angina pectoris.

John William Peck, Berkeley, Calif.; Medical Department University of California, San Francisco, 1905; member of the California Medical Association; aged 51; died in July.

Alvin B. Sweet, Guthrie, Okla.; Chicago (Ill.) Homeopathic Medical College, 1888; for many years city health officer; aged 75; died, September 8, following a long illness.

Charles McKinnis, Denver; College of Physicians and Surgeons, Keokuk, Iowa, 1889; member of the Colorado State Medical Society; aged 72; died, August 28.

M. Joseph Ernest Legris, Arctic, R. I.; University of Montreal Medical Faculty, Montreal, Que., Canada, 1879; aged 66; died, September 8, following a long illness.

Frederick George Elliott, Mansfield, Pa.; University of Vermont College of Medicine, Burlington, 1889; aged 73; died, September 6, following a long illness.

Rollin Seward Case, Pasadena, Calif.; University of Michigan Medical School, Ann Arbor, 1865; formerly a practitioner in Cleveland; aged 83; died, July 22.

Frank Babcock, Cumberland, Wis.; Milwaukee Medical College, 1912; aged 38; died, September 5, at St. John's Hospital, St. Paul, following an appendectomy.

William Firth Savage, Guelph, Ont., Canada; Victoria University Medical Department, Toronto, 1866; aged 82; died suddenly, at Vancouver, August 2.

Franz J. Arst, St. Louis; Humboldt Medical College, St. Louis, 1868; formerly on the staff of the City Hospital; aged 79; died, September 2, of senility.

Leonard E. Warren, Williamstown, W. Va.; Columbus (Ohio) Medical College, 1878; aged 76; died, September 5, of cerebral hemorrhage.

James Phillip McAdams ● Lowell, Mass.; Medical School of Harvard University, Boston, 1894; aged 55; died, August 26, of pernicious anemia.

Adam Galbraith Elliott, Lucknow, Ont., Canada; Trinity Medical College, Toronto, 1883; aged 65; died, suddenly, at Kincardine, August 2.

Elisha Tolman Gould ● Sonora, Calif.; Medical School of Maine, Portland, 1880; aged 67; died, September 8, following a long illness.

Ira B. Lahmer ● Walsenburg, Colo.; University Medical College of Kansas City, Mo., 1898; aged 59; died, September 5, of diabetes.

Albert Von Holt Michell, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, Toronto, 1890; aged 59; died, July 30.

Stephen James Jones, Hamilton, Ont., Canada; Victoria University Medical Department, Toronto, 1886; aged 62; died, August 11.

Richard Grover Jones ● El Paso, Texas; Kansas City (Mo.) College of Medicine and Surgery, 1919; aged 28; died, July 10.

Latimer Pickering, Toronto, Ont., Canada; L.R.C.S., Edinburgh, Scotland, 1880; aged 68; died, August 5.

Correspondence

"CROOKES LENSES"

To the Editor:—I was much interested in the query of J. F. and the reply (THE JOURNAL, September 15), on Crookes lenses, particularly as I was a victim of a severe acute solar retinitis in 1911 from overexposure to tropical sunlight in army service, and since then a sufferer from the retinal asthenopia often a permanent sequela of this form of ocular injury.

In my search for relief, I have run the gamut of protective optical lenses and the personal knowledge gained may be of interest.

Crookes glass is now marketed in three shades, Nos. 1, 2 and 3, instead of the former Absorptions "A" and "B." Shade 2 in tint is between the former A and B. This glass is now and has been for some time the object of an intensive advertising propaganda by the optical interests generally; we are told now that American-made Crookes glass is to be had, just as good as that formerly made in England from the formulas of Lord Crookes. It is prescribed quite largely by many oculists, largely because it has been brought to their notice as a result of advertising propaganda; it is also made up almost as a routine by many enterprising opticians and optometrists, simply because they can "get more for" Crookes lenses; of course, prescribed by the last named, with little if any real knowledge or regard for pathologic changes in the eye.

Intense light, sun or artificial, is often the cause of much ocular discomfort and, in certain cases, the cause of organic ocular lesions. India, the home of cataract, is said to be the brightest country on the globe. In a personal communication, Walter of Florida stated that he had never examined the eyes of a native Floridian over 45 years of age which did not show cataractous changes in the lenses. Lord Crookes' intensive research into the causes of glass-blower's cataract showed that the heat or infra-red rays of the spectrum were at the bottom of most of this trouble. For a while we heard a good deal of the deleterious effects of the ultraviolet rays at the other end of the spectrum. In snow-blindness, Klieg eye, etc., the ultraviolet rays are apparently the causative factor; but as a general proposition it may be stated to be a question of intensity of the light, rather than its quality.

My own experience with Crookes glass has been rather disappointing; perhaps I expected too much of it; the "A" shade was worn several years, seemed to have some slight favorable effect under artificial illumination (perhaps this was the psychic element you mention), but against strong sunlight it was of little value. The "B" absorption was given a thorough tryout on a transcontinental motor trip in 1915, and proved disappointing; it did not give much relief against desert glare, and noticeably obstructed vision on dark, cloudy days.

In general, an equally dark shade of common smoked glass seemed as satisfactory, and considerably less expensive.

Because of the claims made for this glass, and because of the further cosmetic value in being practically colorless in the lighter shades, Crookes glass is being prescribed almost as a routine by some oculists.

From study and personal experience with practically every protective glass made today, I believe that glasses of the Fieuzal type—a greenish yellow—will afford the most real relief not only to those who complain of irritation from bright sunlight, but also to those whose vocation compels them to work largely under artificial light. In the darker shades this glass affords much relief to sufferers from photalgia.

I do not believe that any of these protective glasses should be worn except on the prescription of a competent oculist, and then not until careful correction of refractive error fails to afford relief, or a definite pathologic condition is found. The lightest shade found effective should be prescribed made up in patient's correction, and large lenses prescribed so as to afford sufficient eye coverage. Color values in the lighter shades of Crookes and Fieuzal glasses remain unchanged for all practical purposes; I think that the assumed danger of color blindness from the use of tinted or colored lenses is more theoretical than practical.

Glasses of the Fieuzal type may be obtained under various trade names, such as Akopos and Naktic, and in varying shades from practically colorless on up to shades dark enough for even the welder to use. Because of some twelve years' experience, both as a patient and as an oculist, I would unhesitatingly recommend the Fieuzal type glass as far superior to the Lord Crookes type lens.

J. B. H. WARING, M.D., Blanchester, Ohio.

ANESTHETIC FATALITIES

To the Editor:—In Queries and Minor Notes (THE JOURNAL, July 28, p. 320), under the caption, "Ethyl Chlorid as a General Anesthetic," there is misinformation concerning the comparative dangers of ethyl chlorid with other anesthetics. If the inquirer does only what he says—uses ethyl chlorid to "produce unconsciousness and then switch to ether"—his present technic as regards *safety* cannot be improved on, as the only deaths recorded under ethyl chlorid have been with the patient in full surgical anesthesia. The inquirer's technic is considered especially safe for children. With adults, the "margin of safety" is increased by preliminary medication (*New York M. J.*, Oct. 28 and Nov. 4, 1916). The answer further states that "the fair comparison for ethyl chlorid is with nitrous oxid. Ethyl chlorid is somewhere between 200 and 66 times more dangerous than nitrous oxid." In 1911, circulars were sent to ninety-nine hospitals widely separated in the United States, Canada and the Canal Zone, which furnished me statistics for 278,945 anesthesias for the years 1906 to 1911 inclusive. The mortality of the ethyl chlorid-ether sequence is there stated as 1 in 4,331, and of the nitrous oxid-ether sequence as 1 in 6,905; according to these statistics, the margin between these two sequences is small, the difference being 0.627 in favor of nitrous oxid. This may be considered fairly accurate for comparative purposes, and these are the only figures available for this special comparison. For ether, drop or vapor, the mortality is 1 in 5,623; for nitrous oxid, 1 in 657; and, from all the information available, this comparison stands today. "Ether" is therefore more than seven times as "safe" as "nitrous oxid," and this margin can be easily demonstrated in the laboratory. Your statement, "The accepted mortality rate from nitrous oxid is about 1 death in 1,000,000 anesthesias" is, in the face of these *facts*, absurd. You do not qualify your statement by saying "nitrous oxid and oxygen." In 1911 statistics are misleading and erroneous as to "nitrous oxid and oxygen—no deaths in 8,585 administrations; local anesthesia, no deaths in 14,878." At this time (1911) nitrous oxid and oxygen and local anesthesia had only begun to be used extensively. Since that time the committee appointed by the American Medical Association has reported forty deaths from the local anesthetics, but in spite of this fact, I believe that "local anesthesia" is safer than any general inhalation anesthesia. "Nitrous oxid and oxygen," unless preceded by preliminary medication of sufficient strength to preclude forcing the gases, or unless supplemented by ether, or preferably by both procedures, is still far more dangerous to life than ether. Such comparisons should not be made today. Proper preliminary medication, sequences and combinations are much safer than any single agent, whether local or general, and all safeguards should be used.

JAMES T. GWATHMEY, M.D., New York.

[COMMENT.—See answer to query, "Deaths from Nitrous Oxid Anesthesia," THE JOURNAL, September 15, page 948.—ED.]

NITROUS OXID-OXYGEN

To the Editor:—In his communication on deaths due to nitrous oxid (THE JOURNAL, September 15, p. 948), Dr. J. F. Baldwin moderately confined his attention to two or three cities. To obtain exact and complete figures is impossible simply because too many hospitals and surgeons, even of high reputation, put every obstacle in the way of any person's seeking the truth, and will even deny in the face of witnesses that such deaths ever happened.

In spite of these difficulties, my own investigation gives the following result: In addition to 30 deaths that Dr. J. T. Gwathmey, New York, mentioned in 1914, 26 by Dr. C. K. Teter, Cleveland, where 9 of them occurred, and 18 by A. H. Miller, Providence, there were: in Cincinnati, 7; Detroit, 10; Nashville, 6; Boston, 3; Akron, 8; Toledo, 6; Chicago, 6; Kansas City, 5; Minneapolis, 3; St. Paul, 5; Sioux City, Iowa, 5; Peoria, 3; New York, 3, and one each in Denver; Sheridan, Wyo.; Knoxville, Tenn.; Aurora, Ill.; Salt Lake City; Silver City, N. M.; Indianapolis; Baltimore, and Lisbon, Ohio. This is a rather formidable list of 79 which, with those of Gwathmey, Teter and Miller, make 143. T. Rovsing reported 14 in Copenhagen, Denmark. Baldwin's Columbus figure 20 makes 163 in the United States.

A. S. MCCORMICK, M.D., Akron, Ohio.

"AN OVARIAN HORMONE"

To the Editor:—In THE JOURNAL, September 8, appears an article by Allen and Doisy on "An Ovarian Hormone," in which the authors show that the follicle fluid of the pig ovary, when injected into castrated or into immature mice and rats, produces typical estrual hyperemia, growth and hypersecretion in the genital tract and growth in the mammary glands. They mention that I (Frank, R. T.: The Ovary and the Endocrinologist, THE JOURNAL, Jan. 21, 1922, p. 181) produced "uterine hyperemia" in two normal virgin rabbits by the injection of liquor folliculi—but "one cannot be quite sure that the changes described were not caused by the activity of the ovaries." The authors, however, misquote me. My statement reads that "well marked hyperplasia" resulted, which signifies that estrual changes had been produced by the injections. In order to avoid the unnecessary amount of labor involved in spaying large series of animals, after innumerable control tests, I have used immature animals, long before estrus could occur under normal conditions, and in that fashion avoided the confusing factor of ovarian activity. The sole difference in my experiments and those performed by Allen and Doisy was that the latter used mice and rats and that I employed rabbits as a test animal.

Their further work on the extraction of the active substance from the liquor folliculi by means of lipoid solvents is also of interest but, unfortunately, has brought them no further than Iscovesco (*Compt. rend. Soc. de biol.* **73**:104, 1912), Aschner (*Arch. f. Gynäk.* **99**:534, 1913), Hermann (*Monatschr. f. Geburtsh. u. Gynäk.* **51**:1, 1915) and Frank (*Surg. Gynec. & Obst.* **21**:646 [Nov.] 1915.) advanced in our search for the ovarian hormone. Their furthest purification resulted in "an oily residue" free from protein but contaminated "with a little fatty material." The sole difference

between Allen and Doisy and the authors mentioned is that the former used follicle fluid as the raw material, while we made our extracts from the corpus luteum. Why Allen and Doisy obtained negative results from their "extracts of corpora lutea," I cannot say, unless they used the commercial extracts. Fresh material extracted with alcohol and lipoid solvents gives results identical with those obtained by Allen and Doisy with follicle extracts.

The "few points of chemical interest" mentioned by Allen and Doisy have been antedated by Frank and Rosenbloom (Physiologically Active Substances Contained in the Placenta and in the Corpus Luteum, *Surg. Gynec. & Obst.* **21**:646 [Nov.] 1915) and by Giesy (Chemical Study of the Placental Hormone, Newark, N. J., Loges and Wiener Company, 1920), which was begun, at my suggestion and under my direction, in 1916, and because of delay incident to army service, was not completed or reported in print until 1920.

I must dissent emphatically from a number of statements made by Allen and Doisy:

1. They state that there is no conclusive evidence of a definite localization of the hypothetic hormone. As I emphasized in 1922, and recently at the meeting of the Colorado State Medical Association, Glenwood Springs, September 4, "Pharmacological researches, therefore, show that the follicle as well as the corpus luteum secretion can maintain the growth and nutrition of the uterus. In large dosage, hypertrophy of uterine muscle and mucosa takes place. The external genitalia and mammary glands are also stimulated. These reactions are specific" (Frank: The Ovary and the Endocrinologist). A summary of the detailed analysis of the effects produced appeared in the Proceedings of the American Association for Cancer Research, April 5, 1917 (*J. Cancer Res.* **2**:515, 1917). The researches referred to above conclusively warrant this statement. The sole reaction that I have been unable to reproduce by experimental methods is the production of "deciduomata," which Leo Loeb has shown are due to a function of the corpus luteum. Whether this failure is due to faults of experimentation, or whether the deciduoma forming hormone is not contained in the lipoid fraction, I am unable to state. Furthermore, placental extracts produce a biologic reaction identical with that of the follicle fluid and corpus luteum. Whether the placenta stores up a hormone elaborated by the corpus luteum of pregnancy, or whether it produces a biologically identical body, I have also been unable to determine (Frank, R. T.: The Placenta Regarded as a Gland of Internal Secretion, *Surg. Gynec. & Obst.*, September, 1917, pp. 225-229 and 329-331).

The ovarian hormone, therefore, at the time that Allen and Doisy began their work, was no longer hypothetic, nor was or is it limited to the follicle fluid. It is contained in the follicle fluid and in the corpus luteum, probably also in the placenta.

2. Allen and Doisy state that there is an "absence of any suitable test for the activity of ovarian extracts." This statement, too, must be contradicted. The castrate, or as I have also shown, the immature female animal of any convenient species, is an excellent test object for the activity of ovarian extracts. This has been known for many years and universally employed. That the criteria enumerated by Stockard in guinea-pigs, and by Long, Allen and their collaborators in rats and mice, may prove more convenient may well be true. The method, however, is not new in any sense. The psychic phenomena of rut and the behavior of the animals are too variable to be used as indicators. I have repeatedly seen spayed female rabbits accept the buck, and occasionally pregnant rabbits likewise permit coitus, which then is almost invariably followed by abortion.

Summed up, therefore, the interesting results of Allen and Doisy confirm the positive results obtained by me with follicle fluid in the rabbit, by showing that a similar effect is produced in the mouse and rat. These authors have also shown that the lipoid fraction of the follicle fluid contains the same active substance that has been isolated in an impure state by Iscovesco, Aschner, Hermann and myself from the corpus luteum and placenta. They submit no evidence that their extract is purer than the ones previously obtained.

The biologic significance of all these researches consists in evidence that both the growing follicle and the corpus luteum contain a hormone that produces anabolic phenomena in the genital sphere (including the breasts). The changes produced appear to be quantitative. Withdrawal of the hormone in the prepared genital tract is followed by an abrupt catabolic change, which in the human female shows itself as menstruation.

ROBERT T. FRANK, M.D., Denver.

DEPILATORY AND ANTISEBACEOUS ACTIONS OF BORIC ACID

To the Editor:—In Mathews' widely used textbook, "Physiological Chemistry" (Ed. 3, p. 209) is the following statement regarding boric acid:

"Now it is found if a glass rod be touched to the skin beside the nose and then touched to the water, it makes the camphor [on the water] still, provided the skin has a normal amount of oil. A quantitative determination of the oiliness of the skin in different localities can be made by this method. It has been found that the ingestion of boric acid in sufficient quantity so completely *prevents the secretion of oil, causing all the hair of the body to come out* [italics ours], that the camphor no longer becomes still if the rod is rubbed by the side of the nose and then touched to the water."

This reference to the depilatory and antisebaceous actions of boric acid is not, however, supported by evidence in the book, and one searches in vain for evidence in the existing scientific and clinical literatures, and in current works on toxicology and therapeutics. Twenty-four years ago, an English physician, Evans, reported a number of cases of poisoning from the use of large doses of boric acid in cystitis over several weeks' duration (*Brit. M. J.*, June 28, 1899, p. 209). However, the report presents no proof or evidence as to the specific action of boric acid on the skin. Evans merely reported that two patients, who had received boric acid, showed a temporary loss of hair. One patient with cystitis received increasing doses of 10 to 20 grains three times daily for three weeks (total, 1,260 grains [?]) and at the end of a fortnight exhibited a dermatitis; eventually the hair on the face and head fell out, and the hair reappeared again six weeks later. In the other patient, the hair fell out to a slight extent, and marked exfoliation of the skin occurred. However, such reports cannot be cited to illustrate the working of a force (surface tension) in physical chemistry. No physician, barber, manicurist or hair-dresser will, of course, be misled as to the alleged depilatory and antisebaceous actions of boric acid, for the matter does not harmonize with every-day experience. It should be emphasized, however, that uncritical statements concerning the actions and therapeutic possibilities of drugs, especially of the new and untried variety, must be particularly deprecated in textbooks devoted to the fundamental medical sciences.

P. J. HANZLIK, M.D., San Francisco.

Dust or Droplet Hypothesis of Childhood Infections.—Closer examination of infection charts serves only to increase our doubts as to the sufficiency or probability of the dust or droplet hypothesis in explaining the generality of childhood infections.—A. K. Krause: Rest and Other Things, p. 30.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ARSPHENAMIN AND CANCER

To the Editor:—August 7, I wrote in reference to treatment of cancer (tumors) with neo-arsphenamin or arsphenamin. August 16, you enclosed the following reference: "Matzdorff, P.: Treatment of Tumors with Arsphenamine, Especially Brain Tumor, *München. med. Wchnschr.*, Jan. 13, 1922." Can you supply me with the substance of this article, as I cannot locate it?

E. F. SLATER, M.D., U. S. S. *Antares*, Newport, R. I.

ANSWER.—Matzdorff is assistant at the St. George General Hospital at Hamburg, in the neurologic service, and he reports a case of gradually increasing somnolence and left hemiparesis four weeks after an attack of sudden unconsciousness, followed by malaise for a day, in a man, aged 47. The positive Wassermann reaction and the findings in the cerebrospinal fluid led to specific treatment for syphilis. No benefit was observed from inunctions and iodid, but nine days after the first, and four days after the second injection of neo-arsphenamin, marked subjective improvement was observed and no further objective symptoms could be detected. For the following six weeks the patient was free from all symptoms and disturbances. Then the former symptoms returned, and necropsy not long after disclosed a large, soft, gliomatous sarcoma. The prompt benefit from the neo-arsphenamin misled the diagnosis completely. Matzdorff compares this experience with those related by Czerny, Zieler, Noethe and Jooss, in which arsphenamin preparations have been used in treatment of cancer, generally from an erroneous diagnosis, but he adds that roentgen-ray treatment of cancer seems to have crowded it into oblivion.

TREATMENT FOR TAENIA SOLIUM INFESTATION

To the Editor:—What is the best method of treating a child from 3½ to 4 years old infested with *Taenia solium?*

STEPHEN E. COHE, M.D., Cincinnati.

ANSWER.—Pelletierin tannate is probably the best tapeworm remedy for a child, because of the comparative ease of administration. For a 4 year old child, the dose would be from 0.04 to 0.06 gm. This might be administered in a syrup or an aqueous elixir, such as the aqueous elixir of glycyrrhiza. The dose of the oleoresin of aspidium would be from 1 to 2 gm., which might be given in the form of an emulsion or mixed with fruit preserve in an attempt at disguising. Liquid diet, and calomel, saline solution and colonic flushing to cleanse the alimentary canal as much as possible on the day preceding, are desirable. The treatment should be given in the morning on an empty stomach, the patient staying in bed. One or two hours after the dose, the patient may be given a wineglassful of solution of magnesium citrate every hour until profuse evacuation has occurred.

THE DREYER TUBERCULOSIS VACCINE

To the Editor:—I have just read the very interesting article of Dr. Paul H. DeKruif, Ph.D., on "A New Fight Against Tuberculosis," published in *Hearst's International* for October, 1923, page 40. Are the statements he makes true? Has THE JOURNAL published any articles or abstracts or anything at all concerning Dr. Dreyer's work?

WILLIAM CURRY, M.D., Cane Hill, Ark.

ANSWER.—The present status of the Dreyer tuberculosis vaccine was discussed editorially in THE JOURNAL, July 14, p. 138. It was also recently discussed in the following references: "The Dreyer Tuberculosis Vaccine," August 11, p. 495; "Diaplyte Vaccines and Antigens," August 25, p. 694. The editorial concluded with the statement: "It is unnecessary to remind our readers that this work is in the experimental stage, at least so far as it concerns the treatment of tuberculosis. The experiments are scientific and have good theoretical basis; future developments will be observed with great interest." No new evidence has, as yet, been submitted.

CONSTIPATING EFFECT OF MILK

To the Editor:—Please be kind enough to advise me as to the best thing to use in sweet milk to prevent its constipating effect. Please omit name.

M.D., Atlanta, Ga.

ANSWER.—Enriching the milk by the addition of cream or of lactose will probably answer the requirements in most cases. If not, magnesia magma may be resorted to.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA: Phoenix: October 2-3. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

CALIFORNIA: Sacramento, October 15-18. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, October 2. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, October 9. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.

FLORIDA: Tallahassee, October 9-10. Sec., Dr. W. M. Rowlett, Tampa.

GEORGIA: Atlanta, October 9-11. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Boise, October 2. Dir., Mr. Charles Laurenson, Boise.

ILLINOIS: Chicago, October 9-11. Supt. Mr. V. C. Michels, Springfield.

KANSAS: Topeka, October 9. Sec., Dr. Albert S. Ross, Sabetha.

MICHIGAN: Lansing, October 9. Sec., Dr. Beverly D. Harison, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, October 2-4. Sec., Dr. Thomas S. McDavitt, 539 Lowry Bldg., St. Paul.

MISSOURI: Kansas City, October 3-6. Sec., Dr. Cortez F. Enloe, State House, Jefferson City.

MONTANA: Helena, October 2. Sec., Dr. S. A. Cooney, 205 Power Bldg., Helena.

NEVADA: Carson City, November 5. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, October 16-17. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, October 8-9. Sec., Dr. W. T. Joyner, Roswell.

OKLAHOMA: Oklahoma City, October 9-10. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, October 2. Sec., Dr. Jorge del Toro, 1 Olimpe St., San Juan.

RHODE ISLAND: Providence, October 4-5. Sec., Byron U. Richards, State House, Providence.

SOUTH CAROLINA: Columbia, November 2. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

UTAH: Salt Lake City, October 2. Dir., Mr. J. T. Hammond, Salt Lake City.

WEST VIRGINIA: Charleston, October 23. Sec., Dr. W. T. Henshaw, Frankenberger Bldg., Charleston.

WYOMING: Cheyenne, October 8-10. Sec., Dr. J. D. Shingle, Cheyenne.

Rhode Island January Examination

Dr. Byron U. Richards, secretary of the Rhode Island State Board of Health, reports the written and practical examination held at Providence, Jan. 4-5, 1923. The examination covered 7 subjects and included 70 questions. An average of 80 per cent. was required to pass. Five candidates were examined, all of whom passed. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
Medical School of Maine	(1912)	94.2
Tufts College Medical School	(1922, 2)	86.5, 87.8
University of Michigan Medical School	(1921)	93.1
University of Vermont College of Medicine	(1921)	89.1

Iowa May and June Examination

Dr. Rodney P. Fagen, secretary, Iowa State Board of Medical Examiners, reports the written examination held at Iowa City, May 31-June 2, 1923. The examination covered 8 subjects and included 100 questions. An average of 75 per cent. was required to pass. Forty-nine candidates were examined, all of whom passed. Six candidates were licensed by reciprocity. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
National Medical University, Chicago	(1898)	84.8
Northwestern University Medical School	(1923) *	91.3
Rush Medical College	(1916)	91.8
State University of Iowa College of Medicine	(1923, 44)	86.8, 88.6, 89.2, 89.6, 89.6, 89.7, 89.7, 89.8, 90, 90.1, 90.1, 90.2, 90.3, 90.3, 90.5, 90.5, 90.5, 90.6, 90.6, 90.7, 90.7, 90.7, 90.8, 90.8, 91, 91.1, 91.2, 91.2, 91.6, 91.6, 91.6, 91.7, 91.7, 91.8, 91.8, 91.8, 92, 92.1, 92.2, 92.3, 92.3, 92.5, 92.5, 93
University of Vienna, Austria	(1914)	89.2
University of Budapest, Hungary	(1914)	88.2

College LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College	(1921) (1922)	Illinois
University of Minnesota Medical School	(1922, 2)	Minnesota
Creighton Medical College	(1920)	Nebraska
University of Oklahoma School of Medicine	(1919)	Oklahoma

* This candidate has finished his medical course and will receive his M.D. degree on completion of a year's internship in a hospital.

Book Notices

LABYRINTH AND EQUILIBRIUM. By Samuel Steen Maxwell, M.S., Ph.D., Professor of Physiology in the University of California. Cloth. Price, $2.50 net. Pp. 163, with 11 illustrations. Philadelphia: J. B. Lippincott Company, 1923.

The nerve mechanism producing the alteration in muscle tension which enables an animal to balance itself in various movements and attitudes has been the subject of experimental investigation by physiologists since the time of Flourens, a hundred years ago. As a result, it has long been known that in these muscular changes, in vertebrates, the labyrinth of the ear plays an important part. Yet the specific value of the part played by the labyrinth, the localization of the separate functions, and the nerve reflexes involved, are still disputed or unknown. One welcomes, therefore, this valuable experimental study of the labyrinth of the ear in the dogfish and ray, vertebrates in which that organ is of considerable size and easily accessible. Two separate functions in this automatic balancing are recognized: the dynamic or kinetic—the adjustment of muscles to changes of attitudes during movement—and the static—the fixation of the posture or attitude arrived at. Part of Maxwell's investigation was directed to determine the localization in the labyrinth of these functions. Since all changes of position except movement in a straight line may be regarded as susceptible of analysis into rotation relative to the three directions of space, and as the canals and ampullae of the labyrinth bear a relatively close relation to these planes, it is of fundamental importance to ascertain the movement of the eyes and the fins during rotation in these plans. Not only was Maxwell able to determine these with accuracy, but he was able by applying direct pressure to the ampullae and the utricular otolith to duplicate these movements and correlate the findings. His result seems definitely to show that in fish the dynamic function of equilibrium lies both in the ampullae and in the otoliths of the utricles, except during rotation in the horizontal plane, in which the function is limited to the horizontal ampullae. Each horizontal canal functions only to turning to its own side. In discussing the results of these rotation movements, Maxwell gives a brief account of the influence on balancing of other sense organs such as arise from contact of the body with solids, for instance, the walls of the tank in which the fish are swimming. Contact with solids in labyrinthless dogfish occupy a subsidiary place in equilibrium, and if one may judge from the results obtained in fish, the retinal stimulation has a relatively negligible part when compared with higher vertebrates.

Maxwell gives details of experiments to test the hypothesis of Breuer, which assigns all the dynamic function to the ampullae and all the static function to the otoliths. This commonly accepted hypothesis is based chiefly on the anatomic structure of the parts, though the recent work of Magnus and de Kleijn offers experimental evidence supporting it. Maxwell shows that Breuer's hypothesis does not hold in fish. He was able to remove completely the canals and ampullae with little or no injury to the utricle and saccule, and found that in absence of the ampullae all compensatory movements, except those in respect to rotation in the horizontal plane, can be brought about through the action of some other part of the labyrinth. By washing out the otoliths in the utricle and saccule with little or no damage to the ampullae, he found that compensatory movements and postures, that is, dynamic and static reactions, are still to be seen differing only from the normal in being slower. They are similar to reactions occurring after removal of ampullae, except that compensatory movements in the plane of the horizontal canal still occur. In short, the ampullae and otoliths reenforce each other except in response to rotation in the horizontal plane. This reaction he found confined to the utricular otolith, so substantiating the findings of Parker that in fish the loss of the saccular otolith produced no noticeable effect on equilibrium. Contrasted with this, Magnus and de Kleijn have shown that, in guinea-pigs, injury to the otolith is followed by loss of static function, while the dynamic remains, pointing to a differentiation of function in mammals.

When a fish with one labyrinth destroyed is rotated in the horizontal plane to the sound side, normal compensatory movements of eyes and fins occur; when rotated to the operated side, no reaction occurs. It would appear, therefore, that in fish one labyrinth functions only for rotation movement in one direction. Maxwell quotes the experiments of Trendelenburg and Kuhn to show that this also holds for lizards and snakes, if retinal effects are excluded. This explanation will not hold for pigeons, as Ewald showed that in blind pigeons after destruction of one labyrinth, compensatory movements are still made to rotation in both directions. Since there is a plus and minus action of each labyrinth in the higher vertebrates, some other explanation than that of retinal stimulation would appear to be required.

There is an interesting discussion on what is the adequate stimulus of the ampullae, pressure or torsion. As the cilia project into the gelatinous mass of the ampullae, the endolymph movements can have no effect on separate cilia. Maxwell shows that torsion and not pressure must be the adequate stimulant, the direction of torsion determining the sense of the compensation. The plane of the canals is not necessary to the dynamic function of the ampullae, for if he ligated the horizontal canal as nearly as possible in its entirety, cutting it and placing it as nearly as possible at right angles to its original position, in this altered position the reaction to rotation in the horizontal plane was normal. As to the purpose of the canals, Maxwell suggests that they may equalize pressure in the ampullae analogous to the eustachian tube equalizing air pressure in the middle ear. The utricular otolith responds to rotation in all planes except the horizontal, and the direction of displacement of the otolith causes the stimulus. The static function is the maintenance of the compensatory position which the dynamic has produced, and is a function of both ampullae and utricular otoliths, though under normal conditions the horizontal canal can give no static effect, as no changed condition relative to gravity can here occur. In the concluding chapter, Maxwell discusses nystagmus and the caloric reaction. He believes that this reaction is more likely to result from heat or cold acting through the larger mass of fluid in the vestibule (utricle) rather than by influencing the fluid in the canals. He shows on this hypothesis how a change in position of the head will change the direction of the nystagmus. This monograph on a difficult and important subject will be welcomed by physiologists and otologists. It is a fitting account of painstaking experimental work conducted over a number of years by one who has become an adept with the difficult technic required.

DIAGNOSTIK UND THERAPIE DER KINDERKRANKHEITEN MIT SPEZIELLEN ARZNEIVERORDNUNGEN FÜR DAS KINDESALTER. Ein Taschenbuch für den praktischen Arzt. Von Prof. Dr. F. Lust, Direktor des Kinderkrankenhauses (Bad. Landesanstalt für Säuglings- und Kleinkinderfürsorge) in Karlsruhe. Third edition. Paper. Price, 9 marks, 6 pfennigs. Pp. 465. Berlin: Urban & Schwarzenberg, 1923.

This is a simple compendium of the diseases of children, much abbreviated but covering almost the whole field. Following the chapters on actual diseases there is a second part devoted to drugs, and a third to hospitals and sanatoriums, the latter, of course, being confined almost altogether to those found in Germany. The book is not superior in any way to many similar books in the English language.

STUDIES IN MENTAL DEVIATIONS. By S. D. Porteus, Professor of Clinical Psychology, and Director Mental Clinic, University of Hawaii. Cloth. Price, $4. Pp. 276, with 13 illustrations. Vineland, N. J.: The Training School, Department of Research, 1922.

This book, dedicated to the Training School at Vineland, N. J., is a summary statement of work done with the maze and other tests devised by the author. The presentation is technical and statistical, and assumes, for the most part, that the reader is familiar with the tests and their scoring. The aim of the writer is stated to be the establishment of scales for measuring some traits of personality which will be of value to teachers and others having the care of mental defectives as a guide to the probable behavior and aptitude for

occupation. In the main, the author has limited himself to the consideration of simple mental defects, and excludes the groups he speaks of as psychopathic and delinquent, in spite of the broader nature of his title. He is by no means clear as to the distinguishing features. The features studied are: certain body measurements, including "brain capacity" (by which is meant skull capacity or brain volume); the Porteus maze tests; a series of traits devised from adjectives descriptive of the conduct of the children and from which a social inefficiency rating has been devised; a "form and assembling test," which is described in detail; an educational attainment scale, and an industrial rating scale. These are correlated with one another and with the Binet scale. The material is somewhat disconnected, and its practical bearing will be discernible only to those who are thoroughly familiar with psychometric methods.

DIE KRETINISCHE ENTARTUNG NACH ANTHROPOLOGISCHER METHODE. Bearbeitet von Dr. Ernst Finkbeiner. Mit einem Geleitwort von Professor Dr. Karl Wegelin, Direktor des Pathologischen Instituts der Universität Bern. Paper. Price, $4.80. Pp. 431, with 23 illustrations. Berlin: Julius Springer, 1923.

This is an exhaustive treatise on endemic cretinism. It begins with a detailed exposition of the various theories concerning the cause of cretinism, none of which, the author concludes, are satisfactory. The author concludes that there must be something in race predisposition; especially in certain race mixtures. The second part is a minute and detailed description of the symptoms and physical signs of cretinism. One wonders how, in a single lifetime, so much material could have been gathered, and the detail is such as to be overwhelming. In this portion, too, are described the various relationships of the cretin to his community and his psychic development. The third part is devoted to a discussion of the nature and causes of cretinism, together with points on differential diagnosis and prognosis, and the fourth to an estimation of the possibilities of combating cretinism, the treatment and its effects. The whole is followed by a bibliography of 647 numbers. This important work is worthy of careful attention by any one interested in endemic cretinism.

FORMULARY. A List of Drugs and Preparations Selected as Official for Use in Peking Union Medical College Hospital. Prepared under the Direction and Supervision of the Hospital Committee of the Peking Union College. Cloth. Pp. 39. Peking: Peking Union Medical College, 1922.

It is encouraging to note that, in a country where modern medicine has hardly a foothold, there is a spot where prescriptions in the hospital are based on a scientific selection of drugs—a fact that applies to only a few hospitals in the United States. In China, the Peking Union Hospital Medical College, in its worthy endeavor to rationalize materia medica, has established a formulary, wherein are described the drugs, mostly nonproprietary, which may be prescribed and dispensed in the hospital. This formulary was published by the Hospital Committee with two objects in mind, first, to promote the teaching of rational drug therapy within the institution, and, second, to secure the greatest degree of economy compatible with the welfare of the patients of the hospital. To secure the first aim, it has been the intention of the Hospital Committee to eliminate, so far as possible, all irrational mixtures and useless drugs, encouraging reliance on drugs or mixtures of known value. From the standpoint of economy, it has seemed advisable to limit the number of drugs and special preparations required to be carried in stock to the minimum, and to eliminate needlessly expensive drugs when others are known to possess the same therapeutic value. No information is given as to dosage, except in the case of preparations or mixtures peculiar to this formulary. According to the committee, it is expected that the formulary will be used in conjunction with "Useful Drugs," published by the Council on Pharmacy and Chemistry of the American Medical Association. In general, the formulary is drawn up along the lines of "Useful Drugs," but omits all pharmacologic or therapeutic discussion. Eighty preparations that are described in "Useful Drugs" are not included in this formulary, while twenty-three remedies not described in "Useful Drugs" have been incorporated. This difference is due, to a considerable extent, to the relative availability and cost of drugs in two widely separated countries. In the back of the booklet is a "purgatory list," consisting of twenty-six preparations, which, for various reasons, have not been admitted to the formulary, but are to be kept in stock in the pharmacy. It is hoped that most of them will not be admitted, such as cystopurin, heroin, rhinitis tablets and thymus gland. In many American hospitals, even of the better sort, it is not uncommon to find bottles in the medicine case bearing proprietary names instead of the official U. S. Pharmacopeia designations, and to notice the use of a code of proprietary jargon. As a measure to overcome this condition it well might be insisted, as is the case in the hospital in Peking, that medicine cases contain, whenever possible, the nonproprietary substance; that the same general rule should be applicable to prescriptions, and that the nurses should be trained to *use* the nonproprietary designations. The Peking Union Medical College Hospital Committee is to be congratulated on its modern attitude and on its recognition of a high ethical standard in the prescribing of drugs as witnessed by their little formulary.

DIE MEDIZIN DER GEGENWART IN SELBSTDARSTELLUNGEN: HOCHE: KÜMMELL: MARCHAND: MARTIUS: ROUX: WIEDERSHEIM. Herausgegeben von Prof. Dr. L. R. Grote, Privatdozent an der Universität Halle a. S. Boards. Price, $2. Pp. 227, with 6 illustrations. Leipzig: Felix Meiner, 1923.

These volumes represent part of a series, conceived by a German publisher, to present the knowledge and thought of the period. The essays are written by the men who have made the advances and discoveries recorded. The series on philosophy consists of four volumes. In the present two volumes, noted physicians of Germany give brief autobiographies and follow with statements of their contributions to medical science and their opinions as to the eventual value of such contributions in relation to the growth of medicine. There is naturally some unevenness in presentation, but all of the papers are of interest, coming as they do from men who have reached the heights in their work. Particularly noteworthy, because of their literary style, are the contributions of Wilhelm Roux and Felix Marchand.

MEDICAL DIAGNOSIS FOR THE STUDENT AND PRACTITIONER. By Charles Lyman Greene, M.D., Attending Physician, St. Luke's Hospital, St. Paul. Fifth edition. Cloth. Price, $12. Pp. 1453, with 637 illustrations. Philadelphia: P. Blakiston's Son & Co., 1922.

It is only necessary for one to read this book in order to realize the great amount of work involved in its production, for diagnosis covers a very large part of the field of medicine. It is evident that the author's intention was to make the work a practical one and, to facilitate its use, a comprehensive symptom index and marginal headings have been added. What the author considers the essential, or perhaps more important, factors in a diagnosis are put in italics, thus making them more easily grasped by the eye and perhaps more impressive on the mind. That this method of presenting the subject has met with success is evidenced by the fact that five editions of the work have been published. In this edition, more than a hundred pages of new matter have been added, much of this dealing with newer instruments of precision used in the examination of cardiovascular conditions. Notwithstanding this addition of considerable new matter, the work has been kept within a convenient size for ready reference.

TRATADO DE GINECOLOGÍA. Por M. Hofmeier, Profesor de Obstetricia y Ginecología de la Universidad de Wurzburgo. Constituyela 16, edición de la orba de Carlos Schroeder, Enfermedades de los órganos Genitales de la Mujer. Traducido Directamente del Alemán. Paper. Pp. 651, with 307 illustrations. Barcelona: P. Salvat, 1922.

This is a Spanish translation of the sixteenth edition of Schroeder's textbook, as devised by Hofmeier. In this revision an effort has been made to bring it up to date by discarding superseded material and incorporating the latest knowledge. There is the usual anatomic introduction, although, curiously enough, no reference is made to physiology. Some parts are in evident need of further revision, as the old statistics on cancer of the uterus show. The bibliography seems too exclusively German, and no one glancing at this book would imagine any gynecologic work had ever been done outside the former central empires. Practically the

one foreign reference throughout the book is in the chapter on cancer of the uterus to THE JOURNAL of 1889. Thus, in the chapter of sterility no attention has been paid to the work performed in this country by McCollum, Osborne, Mendel and Reynolds on the effect of diet on reproduction nor to Rubin's method of diagnosis and treatment.

BACTERIOLOGY. A Study of Microörganisms and Their Relation to Human Welfare, Discussing the History of Bacteriology, the Nature of Microörganisms and Their Significance in Connection with Pathology, Hygiene, Agriculture and the Industries. By H. W. Conn, Ph.D., and Harold J. Conn, Ph.D., Soil Bacteriologist at the New York Agricultural Experiment Station. Cloth. Price, $4. Pp. 441, with 48 illustrations. Baltimore: Williams & Wilkins Company, 1923.

This volume was prepared by its authors primarily for college classes in first year bacteriology, but also for the general reading public interested in the growth and development of this comparatively new science. No doubt the history of bacteriology has seldom been better presented than in this volume; that is, more concisely, accurately or interestingly. The chapters on this subject should arouse and maintain interest in every reader. The book is divided into four parts, the first dealing with the history of bacteriology and with the general characteristics of bacteria; the second with the nonpathogenic organisms and their relation to the processes of life, and the third with the pathogenic organisms. The final part is technical, and deals with the laboratory side. As has been said in reference to the section on history, this book is well written. The explanations of the processes are brief and accurate. When opposing theories are presented, they are given in an unbiased manner so that the reader may realize the exact state of the subject. Finally, the volume is exceptionally well edited and printed.

SCHÄFFER'S THERAPIE DER HAUT- UND VENERISCHEN KRANKHEITEN MIT BESONDERER BERÜCKSICHTIGUNG DER BEHANDLUNGSTECHNIK FÜR ÄRZTE UND STUDIERENDE. Bearbeitet von Dr. Herbert Stranz. Sixth edition. Cloth. Price, 12 marks. Pp. 493, with 87 illustrations. Berlin: Urban & Schwarzenberg, 1922.

The sixth edition of this work is a revision of Schäffer's book by Dr. Herbert Stranz. New material has been added and the therapy of skin and venereal diseases brought up to date. It is a complete outline of the methods used in this particular branch of medicine. It is unfortunate, however, that this book, in common with other German works, has so many proprietary drugs in the formulas.

Miscellany

TREATMENT OF TYPE I CASES OF PNEUMONIA WITH TYPE I ANTIPNEUMOCOCCUS SERUM

At the last annual meeting of the American Society for Clinical Investigation, Dr. Augustus Wadsworth, director of the Division of Laboratories and Research of the New York State Department of Health, reviewed previous study of the serum therapy of pneumonia, and recorded the results of treatment with antipneumococcus Type I serum in 445 additional cases: 277 from the civilian population, and 168 from the army camps. The variation in mortality of pneumonia, the difficulty of securing satisfactory control series of untreated cases, the potency or lack of potency of the serum used, and the selection of serious cases or delay in treatment, affect profoundly the significance of the statistical reports. In addition there are fundamental conditions underlying the development and course of pneumococcus infection of the lung which determine to a large extent the limitations of serum therapy in pneumonia.

An analysis of cases treated with a serum of known, high potency, produced by one laboratory and by uniform methods, illustrates strikingly the significance of these different factors. A group of 151 miscellaneous cases tabulated since 1915 gave a mortality of 21.86 per cent., while the mortality in the 218 untreated cases for the same period was 18.81 per cent. The detailed study of the fatal cases treated with serum, however, suggests the extent to which the selection of cases and delay in treatment affected these statistics. In one city, 126 additional cases were reported treated with this serum. The mortality was 13.6 per cent., as contrasted with a mortality of 19 per cent. in 126 untreated cases. The conditions were more satisfactory and uniform and the results possibly more significant in this series, but the selection of cases and delay in treatment were evident.

In the following group of cases from the army camps there was little or no selection of cases, and all were treated with serum of the same high potency as that used in the previous group. In an outbreak of 400 cases of pneumonia with a total mortality of 20 per cent., sixty-three Type I cases were treated with a mortality of 8 per cent. Eighteen Type I cases untreated showed a mortality of 39 per cent. Seventy-two Type I cases of another outbreak were treated with two deaths, or a mortality of 2.8 per cent., as contrasted with a mortality of 25 per cent. in untreated cases and 20.39 per cent. in the total of 701 cases. A miscellaneous group of thirty-three Type I cases collected from various camps were treated with no deaths. Thus, 168 cases were treated with this serum with a mortality of 4.16 per cent., and the mortality in untreated cases varied from 20 to 39 per cent., probably averaging between 20 and 25 per cent. on a conservative estimate.

In conclusion, Dr. Wadsworth said that although it is impossible to foretell the results of serum therapy in individual cases, and although there are cases in which the serum will not bring about recovery, it is evident that antipneumococcus Type I serum of high potency, when promptly administered in adequate dosage, is of definite practical value in the treatment of Type I infections of pneumonia.

THE CHEMISTRY OF THE BLOOD IN EPILEPSY

At the last session of the American Society for Clinical Investigation, April 30, 1923, William G. Lennox called attention to the results of determination of the following constituents of the blood in 100 epileptic patients: nonprotein nitrogen, urea nitrogen, amino-acid nitrogen, uric acid, creatinin, sugar and alkali reserve. Practically all determinations were within the limits of normal; the values bore no relationship to the time or frequency of convulsions. Similar determinations were made on the blood of seven epileptic patients during and following prolonged starvation. Starvation was absolute, except for water, and continued for from eleven to twenty-one days. All these patients showed remarkable increase of the blood uric acid (from a prestarvation level of 3 to 5 mg., to a starvation peak of 8 to 16 mg. per hundred cubic centimeters of blood). This increase was found to be due to a failure of the kidneys to eliminate uric acid. It occurred in a normal individual who underwent a short fast. In one of the patients, at the end of starvation, the nonprotein and urea nitrogen rose, respectively, to the remarkably high concentration of 300 and 240 mg. per hundred cubic centimeters of blood. It is believed that these great fluctuations in the nonprotein nitrogenous constituents of the blood during fasting have nothing to do with the fact that the patients were epileptic. During starvation, convulsions were decreased; therefore, the observations furnish additional evidence that in epilesy convulsions are not initiated by increase of uric acid, nonprotein nitrogen or urea nitrogen in the blood.

Venereal Disease in Scotland.—On a survey of all the statistics and estimates, it may be assumed that in Scotland, with a population of about four and three-quarter millions, 12,000 new cases of syphilis, on the very lowest computation, are annually acquired. Two thirds of these are in men. Each year in Scotland, the new infections of gonorrhea are from 35,000 to 70,000. At any given time, at the lowest estimate, 2 to 3 per cent. of the total population are infected by one or other of the venereal diseases. In the populous areas, the minimum figure is 5 per cent. for men and 2 per cent. for women.—T. F. Dewar: *Proc. Roy. Soc. Med.* **16**:84 (Aug.) 1923.

Medicolegal

Infection by Typhoid Fever an "Accident"

(Frankamp v. Fordney Hotel et al. (Mich.), 193 N. W. R. 204)

The Supreme Court of Michigan says that the supply of water in Saginaw was thought to be impure. To get water of a better quality, the hotel company put down an artesian well on its own property and piped the water from it throughout the hotel, except in the pool room. Jan. 15, 1922, the plaintiff entered the employ of the hotel company as head waitress. She roomed and boarded in the hotel until February 23, when she was taken sick with typhoid fever, which she contended was the result of drinking the water from the artesian well. Soon after she was taken sick, she was removed to a hospital. It was some time before she could resume work. The department of labor and industry made an order granting her an award of $14 a week during the period of disability, and $675.54 for medical attention, which award is here affirmed.

The court found no Michigan case directly in point. In *Adams* v. *Acme White Lead & Color Works*, 182 Mich. 157, 148 N. W. 485, it was held that there could be no recovery for occupational diseases such as lead poisoning, but it is evident that the occupation of head waitress in a hotel does not subject one to the liability of acquiring an occupational disease, and that typhoid is not an occupational disease. How could the plaintiff foresee that, if she drank the water supplied to her in the hotel, she would be attacked with typhoid? In *Johnson* v. *Fidelity & Casualty Company*, 184 Mich. 406, 151 N. W. 205, it was argued that death as the result of ptomain poisoning did not create liability under the insurance policy there sued on, but the court asked why should it be said that there is no liability when the assured, intending to take nourishing food, in fact took tainted food, which resulted in ptomain poisoning and death? Why is not the same principle involved when, as in the instant case, one drinks contaminated water, when it was supposed she was drinking pure water? The court holds that the contraction of typhoid is an accident within the meaning of the workmen's compensation act.

Did the plaintiff contract typhoid in the course of her employment, or was the award based on guess, speculation and conjecture? Counsel said that where the typhoid germs came from was a matter of conjecture. The plaintiff's hours of work were from 7 to 9:30 a. m., from noon until 2 p. m., and from 6 until 8 p. m. She admitted that between those hours she was out of the hotel making calls, and occasionally took an automobile ride; and counsel said that it might as well be urged that she got the typhoid germs from something outside the hotel. But the plaintiff testified that the only water she drank was from the deep well; and after she was taken sick her attending physician caused a sample of the water to be analyzed, and it developed that the water was contaminated. The commissioner said that, not being able to determine any other source of infection, it would seem plausible that infection was caused through contaminated drinking water; and the local health officer gave it as his opinion that the plaintiff contracted the typhoid in the hotel. The court treats the evidence as sufficiently showing that the plaintiff contracted the typhoid in the course of her employment, and holds that the award was not based on guess, speculation and conjecture.

Objection to Testimony of Physician Waived

(Chaffee et al. v. Kaufman et al. (Kan.) 214 Pac. R. 618)

The Supreme Court of Kansas holds that objection to the testimony of a physician touching the mental incompetence of a testator, when such physician's information was acquired through his professional attendance on the testator, is waived when the defendant, who objects to such testimony, introduces as witnesses on his own behalf other physicians, who similarly acquired their information and who likewise testify as to the mental capacity of the testator. The defendants in this case were a son and a daughter of the testator, the executor of his will, and a lodge to which he bequeathed $1,000. The court says that objection was made to a physician who had professionally attended the testator testifying as to whether the latter was or was not of sound mind, on the ground that it was a privileged communication; and his testimony may be conceded to have been incompetent, unless the objection to it was waived. But the defendants called two physicians who had professionally attended the testator up to the time of his death, and they, too, testified as to his mental condition, their testimony being favorable to the defendants. Without doubt, therefore, the privileged nature of the testimony of the physician first mentioned was waived, when the defendants introduced testimony of other physicians of the same privileged character, in their own behalf. This rendered it unnecessary to decide whether a waiver of the privilege by all the heirs of a deceased testator is requisite before the confidential information of an attending physician can be disclosed. Of course, the lodge could not be heard to complain of the evidence, nor was it clear that the executor could complain. The privilege is granted by the statute in deference to the private feelings of the patient and in deference to the sensibilities of the members of his family, who are his heirs at law. Other litigants have no concern in the supposed indelicacy of exposing such private matters to public hearing.

Evidence of Negligence—Membership in Association

(Stoskoff v. Wicklund (N. D.), 193 N. W. R. 312)

The Supreme Court of North Dakota, in reversing a judgment for $5,748.60 damages for alleged malpractice that was rendered in favor of the plaintiff, and in granting the defendant a new trial, says that the plaintiff, a man, aged 70, had a corn on the little toe of his right foot. He treated it himself for several weeks, and then consulted the defendant, who told him that the condition had become so bad that it would be necessary to remove the toe, and a few days later the plaintiff submitted to an operation. The wound did not heal, and the defendant said that another operation would be necessary, and one was performed. It appeared that at the time of the first operation the plaintiff was suffering from arteriosclerosis and diabetes, and that the defendant, after a cursory examination, became aware of the arteriosclerosis, but gave no treatment to remedy the plaintiff's general physical condition prior or preparatory to the operations. Finally, gangrene having developed, the defendant advised that it would be necessary to amputate the foot, and suggested that, as there were no proper facilities at that place, the plaintiff should go elsewhere to have it done, and he went to Rochester, Minn., where, after he had received treatment on account of his diabetic condition, his leg was amputated above the knee, this being deemed necessary at that time in order to save his life.

The plaintiff testified that the defendant never advised him that he had arteriosclerosis or diabetes, and never made any inquiries as to his age, weight, health or physical condition; that the only treatment given was an occasional dressing of the foot and the application of, first, a black salve, and, later, a powder; that no diet was prescribed, and no direction given for his care. The defendant, on the other hand, testified that he was aware of the arteriosclerosis prior to the first operation, and that when the foot did not heal after it, he made a further examination and tests and learned of the diabetic condition; that he prescribed necessary and proper medicine and attention, and directed that the plaintiff be put on the proper diet to remedy the diabetes; that at the time of the first operation there was necrosis of the tissue and bone of the little toe; that the second operation was for the purpose of removing sloughing tissue in order that there might be better drainage and that the process of healing might begin; and that he advised the plaintiff of his condition generally and specifically.

The court believes that, on the whole record, there was evidence which might warrant the jury in making its finding of negligence. Both the plaintiff and the defendant were agreed on the rule that a physician is held only to the exercise of the skill and learning of the profession generally in the community in which he practices. Applying that rule under the facts as shown, if the jury saw fit to give credence to the testimony of the plaintiff and his witnesses, rather

than to that of the defendant, it would be warranted in making a finding of negligence. But the burden was on the plaintiff to establish, by a fair preponderance of the evidence, those things essential to the recovery of a verdict. He must establish not only negligence on the part of the defendant, but also that the result obtained was the proximate consequence of that negligence; and the court does not think that it could be said from the evidence in the case that the loss of the plaintiff's leg was established to have been the proximate consequence of the defendant's negligence. In other words, the mere fact of the loss of a leg under the care of a physician, although negligence on the part of such physician is established, is not in itself sufficient to sustain a verdict for damages, in the absence of evidence tending to show that such loss was the proximate consequence of negligence.

Another important point is that, as the court states it, in an action for malpractice, in which the plaintiff, in making his case, on cross-examination of the defendant under the statute, inquired whether the defendant was a member of the Northwestern Medical Association, and, being answered in the affirmative, he further asked whether the defendant had reported the case to the association, and again whether it was not one of the purposes of the association to protect physicians against actions for malpractice, the court holds that there was prejudicial error, even though the objections interposed to such questions were sustained by the trial court, and the witness not required to answer. By objection, the matter was particularly called to the attention of the jury.

On Liability for Negligence of Officers in Selecting Servants and Physicians

(Hamburger v. Cornell University (N. Y.), 199 N. Y. Supp. 369)

The Supreme Court of New York, Appellate Division, Third Department, in reversing a judgment obtained by the plaintiff, says that she had a verdict of $25,000 for the loss of the sight of an eye resulting from an explosion of chemicals in the course of an experiment that she was performing in the chemical laboratory of the defendant. The negligence alleged and sought to be proved was that the defendant had not exercised due care, in that it had not placed competent persons in charge of the dispensing of chemicals from the stock room from which the plaintiff received a portion of the chemicals used by her in the experiment, and had not made proper tests of the chemicals before permitting their use by the students, even though they were purchased in bulk in the original packages from reputable and accredited manufacturers, chemists and dealers. The plaintiff contended, among other things, that the rule exempting a charitable corporation from liability to a beneficiary does not extend to a case of negligence of its managing officers in selecting incompetent servants. But this court is unable to conceive of any good reason for a rule which differentiates in the case of a charitable institution between the negligence of a servant or agent in carrying out details of work assigned to him and the negligence of an agent, although an officer of the corporation, in selecting the servant who causes the injury to a beneficiary of the charity.

The foundation of the rule in New York State exempting a charitable corporation from liability for the negligence of its servants, causing injury to beneficiaries, is that of waiver. It is not that the relation of master and servant does not exist between the charitable corporation and an employee, but that the consequences of the application of the doctrine of respondeat superior (let the master or superior answer) are waived by the beneficiaries in accepting the benefits of the charity. While charitable institutions, such as hospitals, have been exempted from liability for the negligence of nurses and physicians, because as between them and the hospital the doctrine of respondeat superior does not apply, one of the reasons assigned is that the physician is not subject to the direction of the hospital as to the manner of performing his operation. The rule in such a case is additional to and independent of the rule of waiver exempting such a charity, and applies as well to a lay civil corporation supplying the services of a medical practitioner in connection with its undertaking.

The rule as to the duty to select competent medical practitioners arose originally in the steamship cases, because the steamship companies owed a duty imposed by statute to carry a duly qualified medical practitioner and a proper and necessary supply of medicines. So far as such cases rest on the principle that, as between the physician and the company, the relation of master and servant does not exist, they are illustrative of the reason for a similar rule applicable to hospitals in general; but there the analogy ends. The further qualification that, in the case of a lay civil corporation, a corporation other than a charitable one, it would be responsible for negligence in selecting medical practitioners has apparently crept into the hospital cases in the course of applying old rules to new situations, when there was no necessity for qualifying the statement of the old rule.

This court holds to the doctrine, which it concludes to be a manifestly logical development of the law of this jurisdiction, that a charitable corporation is not liable for injury to a beneficiary for the negligence, either of its managing officers in selecting incompetent servants and employees or of servants and employees selected with care. That is now the settled law of Massachusetts.

Death of Injured Person Caused by Anesthetic

(Horrets v. Philadelphia & Reading Coal & Iron Co. (Pa.), 120 Atl. R. 662)

The Supreme Court of Pennsylvania, in affirming a judgment that affirmed an award under the workmen's compensation act for compensation for the death of the claimant's husband, says that in the course of his employment he sustained a compound fracture of the index finger of his right hand. He went to a hospital the next day for an operation. His death was due to dilatation of the heart, which was caused by the anesthetic administered to him in order that a surgical operation might be performed on his injured finger. The injury to his finger was "violence to the physical structure of his body." The violence caused the injury, the injury caused the operation, the operation caused the anesthetization, the anesthetization caused dilatation of the heart, and dilatation of the heart caused death. Hence there was a causal connection between the original violence and the subsequent death.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Washington, D. C., Oct. 15-20. Dr. Luther C. Peter, 1529 Spruce St., Philadelphia, Secretary.

American Association of Railway Surgeons, Chicago, Oct. 18-20. Dr. L. J. Mitchell, 29 E. Madison St., Chicago, Secretary.

American Child Health Association, Detroit, Oct. 15-17. Dr. Philip Van Ingen, 125 East 71st St., New York, Secretary.

American Public Health Association, Boston, Oct. 8-11. Mr. A. W. Hedrich, 370 Seventh Avenue, New York, Secretary.

Association of Military Surgeons of the United States, Carlisle Barracks, Pa., Oct. 4-6. Col. James Robb Church, Army Medical Museum, Washington, D. C., Secretary.

Central Neuropsychiatric Association, St. Louis, Oct. 20. Dr. Karl A. Menninger, Topeka, Kan., Secretary.

Central States Pediatric Society, Detroit, Oct. 18-19. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Pa., Secretary.

Delaware State Medical Society, Middletown, Oct. 8-9. Dr. W. O. La Motte, Industrial Trust Building, Wilmington Secretary.

Medical Association of the Southwest, Kansas City, Mo., Oct. 8-13. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Minnesota State Medical Association, St. Paul, Oct. 10-12. Dr. Carl B. Drake, Guardian Life Building, St. Paul, Secretary.

Mississippi Valley Medical Association, Hot Springs, Ark., Oct. 9-11. Dr. John L. Tierney, University Club Bldg., St. Louis, Secretary.

Nevada State Medical Association, Reno, Sept. 28-30. Dr. Horace J. Brown, Thoma-Bigelow Building, Reno, Secretary.

New England Surgical Society, Boston, Oct. 18-19. Dr. P. E. Truesdale, 151 Rock Street, Fall River, Mass., Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 1-4. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southern Medical Association, Washington, D. C., Nov. 12-15. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Tri-State District Medical Society, Des Moines, Iowa, Oct. 29-Nov. 1. Dr. William B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.

Vermont State Medical Society, Bennington, Oct. 11-12. Dr. W. G. Ricker, St. Johnsbury, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 16-19. Mr. G. H. Winfrey, 104½ W. Grace St., Richmond, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Oct. 3-5. Mr. J. G. Crownhart, 558 Jefferson St., Milwaukee, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

2: 357-485 (July) 1923

Biologic Study of Diphtheria Bacillus. II. Morphology of Pure Line Strains. H. M. Powell, Baltimore.—p. 357.
Id. III. Property of Agglutination in Pure Line Strains Derived from Common Parent-Cell. H. M. Powell, Baltimore.—p. 362.
Study of Normal and Immune Hemagglutinins of Domestic Fowl with Respect to Their Origin, Specificity and Identity. C. E. Bailey, Baltimore.—p. 370.
Anaerobes from Water Samples. P. D. Meader and E. A. Bliss, Baltimore.—p. 394.
*Diagnosis of Smallpox by Paul Method. J. M. Scott and C. E. Simon, Baltimore.—p. 401.
Control of Hookworm Disease. XXII. Migration and Position of Infective Hookworm Larvae in Soils. D. L. Augustine, Baltimore. —p. 416.
Id. XXIII. Experiments on Factors Determining Length of Life of Infective Hookworm Larvae. D. L. Augustine, Baltimore.—p. 420.
Correlation Between Food and Morphology of Termites and Presence of Intestinal Protozoa. L. R. Cleveland, Baltimore.—p. 444.
Studies on Relationship Between Insect Flagellates and Leishmania. E. R. Becker, Baltimore.—p. 462.
Survival of Bacteria in Pupal and Adult Stages of Flies. R. W. Glaser, Princeton, N. J.—p. 469.

Diagnosis of Smallpox by Paul's Method.—Paul's method was tested by Scott and Simon on 104 rabbit eyes, of which thirty-six represented normal controls; fourteen had been inoculated with cowpox vaccine, eight with the contents of varicella vesicles, and eighteen with the contents of smallpox vesicles and pustules. In addition, the test was carried out with corneas that had been inoculated with the vesicular contents from herpes febrilis, herpes zoster, herpes genitalis, pemphigus, dermatitis herpetiformis, ringworm, pure cultures of pyogenic organisms, and with nasopharyngeal swabbings from normal persons and cases of varicella in various stages of the disease. In every case the macroscopic Paul test, in the sublimate bath, was followed by a careful histologic examination in reference to the existence of lesions which could be mistaken for those caused by the variola-vaccinia virus. Of eighteen cases of variola (fourth to eighth day of disease) seventeen were positive to the test, and in all eighteen cases the histologic picture was indicative of variola. Fourteen cases of vaccinia all reacted positively. In other diseases the negative reactions were marked.

American Journal of Medical Sciences, Philadelphia

2: 157-312 (Aug.) 1923

*Use of Fat in Diabetes Mellitus and Carbohydrate-Fat Ratio. W. S. Ladd and W. W. Palmer, New York.—p. 157.
*Simple Classification of Lymph Gland Enlargements, Bases on Glands Removed for Diagnosis. H. Fox and D. L. Farley, Philadelphia.—p. 170.
*Physiology of Pineal Body. Y. Izawa, Okayama, Japan.—p. 185.
*Relation of Addison's Disease to Amyloidosis. M. McCutcheon, Philadelphia.—p. 197.
*Lymphatic Obstruction: Nonparasitic Elephantiasis. L. T. Gager, New York.—p. 200.
*Anatomic Basis for Functional Murmurs. J. Epstein, New York.—p. 208.
*Paroxysmal Ventricular Tachycardia: Report of Case of Unusual Type. D. Felberbaum, New York.—p. 211.
Costodiaphragmatic Adhesions and Their Influence on the Respiratory Function. W. S. Middleton, Madison, Wis.—p. 222.
*Diagnosis of Tubal Pregnancy. E. Novak, Baltimore.—p. 228.
Alkali Reserve of Cerebrospinal Fluid in Various States of Central Nervous System. R. Isaacs, Cincinnati.—p. 237.
*Buffer Solutions in Intestinal Diseases. J. S. Hepburn and H. M. Eberhard, Philadelphia.—p. 244.
*Creatininemia: Based on Study of Fifteen Hundred Blood Chemical Analyses. M. M. Feinblatt, Brooklyn.—p. 249.
*Action of Germanium Dioxid in Pernicious Anemia. M. E. Alexander, Waterbury, Conn.—p. 256.
Antiseptic and Bactericidal Properties of Isopropyl Alcohol. D. H. Grant, Elizabeth, N. J.—p. 261.
*Reactions of Asthmatics and Passive Transference of Hypersusceptibility. A. De Besche, Christiania, Norway.
Differential Diagnosis of Diabetes. H. J. John, Cleveland.—p. 275.

Use of Fat in Diabetes Mellitus.—The carbohydrate-fat (antiketogenic-ketogenic) ratio, which leads to an increase in production of ketone bodies was determined by Ladd and Palmer in eleven cases of diabetes mellitus and one normal person. For practical purposes, the carbohydrate-fat ratio of 1:4, calculated from the formula

$$\frac{F}{G} = \frac{\text{Fat in gm.}}{0.58 \text{ gm. P} + \text{gm. CH}}$$

is the most serviceable in the construction of diets when it is desired to obtain a maximum caloric intake with a minimum in the form of carbohydrate. The authors submit their findings in spite of the great advances made in the treatment of diabetes by Banting and others, because they feel that adequate dietary control will remain the basis of treatment for many cases, especially those of the milder type. Furthermore, if an extract can enable the body to burn a known amount of carbohydrate, a knowledge of the carbohydrate-fat ratio will permit the use of fat in amounts which will insure the greatest energy possible, especially in the severest cases. Attention is called to the error which may occur in the use of tables for calculating food values.

Classification of Lymph Gland Enlargements.—Fox and Farley make a grouping of cases based on the type of cell primarily responsible for the enlargement. The groups into which the cases fall correspond, first, to a theoretical system, based on what is possible when the component parts of lymphatic tissue become hyperplastic, and, second, to types of pathologic characters and clinical behavior. The work also illustrates that certain leukemic and neoplastic forms of lymphadenopathy cannot be diagnosed solely on the basis of clinical signs, but that data acquired by adenectomy must be available for this purpose.

Physiology of Pineal Body.—From Izawa's work it appears that the pineal body's chief function is to repress the premature development of the sexual organs in the female as well as in the male.

Relation of Addison's Disease to Amyloidosis.—A case of Addison's disease is reported by McCutcheon which was associated with widespread amyloidosis involving the cortex of both suprarenals. The amyloidosis apparently resulted from a large hypernephroma. It is held likely that the rarity with which amyloid disease produces the Addison syndrome is not dependent on the preservation of the suprarenal medulla, but rather on the fact that the cortex is not completely destroyed by the infiltration, many cell groups escaping. In the present instance, the destruction of cortex seems to have been severe enough to determine the appearance of Addison's disease.

Nonparasitic Elephantiasis.—Five cases of persistent edema associated with thickening of the subcutaneous tissues and minor skin changes are reported by Gager. The edema is hard, white and not accompanied by sensory changes. The absence of frank inflammation at the onset or during the course of the disease is striking. The general similarity of these cases to what has been described as trophedema and dystrophic edema is pointed out. Except for the lack of a hereditary or familial character, this type of edema bears a remarkable resemblance to the disease first described by Milroy. Edema as found in these patients, in the light of recent knowledge, appears to be due to obstruction of the lymphatic channels and may be classified as elephantiasis of a nonparasitic type. Surgical treatment of these cases alone gives a good prognosis as regards cure.

Anatomic Basis for Functional Murmurs.—Epstein discusses a murmur frequently heard in children and young adults which cannot be traced to embryologic cardiac malformation, endocardial valvular deformity, or to myocardial disease. Because of its uncertain etiology it has received many names which are used carelessly and interchangeably. The uncertainty in the origin of this murmur has also led to its being either totally disregarded or too seriously evaluated. It is therefore of considerable importance for theoretical as well as for practical reasons to put this murmur on a certain scientific basis. Since the origin may be traced to a defective cardiomuscular tonicity, the condition may properly be called myatonia cordis, and the murmur itself myatonic murmur. The diagnosis rests on the fact that the murmur is an isolated objective sign without subjective symptoms and without a history of a previous heart-damaging illness. The prognosis is generally good, but there is always an element of uncer-

tainty, because a perfectly normal heart does not murmur. The treatment is that of the patient and not of the heart.

Paroxysmal Ventricular Tachycardia.—Felberbaum cites a case of paroxysmal ventricular tachycardia in which the impulse traveled alternately and regularly through each ventricle. Only one other case of a similar nature has so far been recorded. The mechanism of its production is discussed. Digitalis intoxication is a possible cause for this serious arrhythmia. The danger lies in the transition of the paroxysm into ventricular fibrillation and sudden death.

Diagnosis of Tubal Pregnancy.—The most important diagnostic symptoms of tubal pregnancy, according to Novak, are the menstrual history, the pelvic pain and the presence of a unilateral tender mass in the pelvis. The diagnosis of the tragic or cataclysmic cases is as a rule comparatively simple.

Use of Buffer Solutions in Intestinal Diseases.—In the treatment of intestinal acidity recourse has been had by Hepburn and Eberhard to two buffer solutions, the phosphate buffer solution and the citrate buffer solution. The phosphate buffer solution was prepared by mixing a one-fifteenth molar solution of primary potassium phosphate and a one-fifteenth molar solution of secondary sodium phosphate in the ratio of 0.5 c.c. of the former to 9.5 c.c. of the latter. The citrate buffer solution was prepared by mixing a one-tenth molar solution of secondary sodium citrate, and an exactly one-tenth normal solution of carbonate-free sodium hydroxid in the ratio of 4 c.c. of the former to 6 c.c. of the latter. Of the two buffers, the citrate solution was used more frequently, since it possessed a greater alkali reserve and, therefore, was able to neutralize more acid before its reaction was reduced to that of normal feces. The solutions are administered by rectal injection. The results have been extremely encouraging.

Creatininemia.—Fifteen hundred blood chemical analyses were made by Feinblatt to study creatinin retention in conditions in which it might possibly occur. There was no selection of cases. The blood values exceeded 2.5 mg. per hundred cubic centimeters in forty-three patients. An analysis of this group showed that in all there were other unmistakable evidences of renal deficit. Forty cases were diagnosed as glomerulonephritis, while the other three patients were anuric. Fourteen patients attained figures of 10 mg. or over per hundred cubic centimeter. All of these patients died within seventeen days, the average length of life being four days. Of fifteen patients who yielded figures from 5 to 10 mg., eleven were dead within seventeen days, averaging six days. Three others have since died. One of the latter finally succumbed to a cerebral hemorrhage after having attained normal blood chemical values. Of twenty-one patients with readings ranging from 2.5 to 5 mg., sixteen are now dead.

Action of Germanium Dioxid in Pernicious Anemia.—Observations were made by Alexander in three cases of pernicious anemia, in which germanium dioxid was administered at the rate of 100 mg. per kilogram of body weight. No clinical improvement was noticed in any of the cases and the hemoglobin and erythrocytes showed no increase during the period of observation. Arsenic and iron, administered hypodermically after the germanium was stopped, lead to an increase of hemoglobin and erythrocytes, also to symptomatic amelioration.

Reactions of Asthmatics.—Taken in conjunction with the local skin and other reactions in asthmatics, the occasional severe symptoms of anaphylactic shock on injection of asthmatics with horse serum and the demonstration in occasional cases of asthma of complement-binding bodies and precipitin in the serum, the results presented by De Besche, showing that the serum of asthmatics may be the means of transferring hypersusceptibility, strengthens materially the opinion that certain forms of asthma may be regarded as anaphylactic in nature.

American Journal of Ophthalmology, Chicago

6: 631-724 (Aug.) 1923

Local Anesthesia an Adjuvant in Ocular Therapeutics Is Process of Absorption Under Nerve Control? J. A. Lippincott, Monte Carlo, France.—p. 631.
Vitreous Membranes on Iris with Adherent Leukoma of Cornea. Y. Yoshida, Kyoto, Japan.—p. 636.
Slit Lamp Studies of Hernia of Vitreous. Relations to Cataract Operations. L. C. Peter, Philadelphia.—p. 644.
Bactericidal Power of Argyrol. R. C. Cheney, Boston.—p. 648.
Serous Tenonitis. W. L. Benedict and M. S. Knight, Rochester, Minn. —p. 656.
Effect of Blood Transfusion on Retinitis of Pernicious Anemia. H. L. Goss, Rochester, Minn.—p. 661.
Surgical Anatomy of Lacrimal Sac. J. H. Bailey, Brooklyn.—p. 665.
Effect of Increase of Intensity of Illumination on Acuity, and Intensity of Illumination of Test Charts. C. E. Ferree and G. Rand, Bryn Mawr, Pa.—p. 672.
Variations in Normal Visual Acuity in Relation to Retinal Cones. A. Cowan, Philadelphia.—p. 676.
Eye Shield to Prevent Delirium Following Senile Cataract Operation. L. M. Gurley, Johnstown, Pa.
Knife Blade in Orbit. A. O. Pfingst, Louisville.—p. 681.
Dacryoadenitis Following Bronchopneumonia. H. McI. Morton, Minneapolis.—p. 682.
Heterophoria and Astigmatism Charts. L. W. Fox, Philadelphia.—p. 684.
Meter Measure for Retinoscopy. W. M. Goldnamer, Chicago.—p. 685.

American Journal of Tropical Medicine, Baltimore

3: 269-367 (July) 1923

*Treatment of Malaria. M. F. Nunez, Barranquilla, Colombia.—p. 269.
Granuloma Inguinale. O. M. Gruhzit, Detroit.—p. 289.
*Methods of Administering Anthelmintics to Remove Whipworms: New Method. S. M. Lambert.—p. 297.
Kala-Azar in Sudan with Special Reference to Its Treatment by Tartar Emetic. R. G. Archibald, Khartoum.—p. 307.
*Serologic Reactions in Yellow Fever. P. P. Grovas, Mexico.—p. 325.
Fleas of Panama, Their Hosts and Their Importance. L. H. Dunn, Ovid, N. Y.—p. 335.
Tropical Bedbug in Relation to Transmission of Relapsing Fever in Panama. L. H. Dunn, Ovid, N. Y.—p. 345.
New Species of Anopheles in Louisiana: Anopheles Atropos D. & K. G. E. Beyer, New Orleans.—p. 351.

Treatment of Malaria.—In a series of 8,000 cases occurring in tropical practice, Nunez says the mortality was reduced by proper treatment to 0.2 per cent. for general malaria, and to 6 per cent. for the malignant types. The arsphenamins promptly abort acute attacks in all forms of malaria, and are specific in the tertian variety. Neo-arsphenamin in concentrated solutions—as much as 0.9 gm. in 2 c.c.—fulfils all essential requirements of the higher dilutions. The technic of injection is given. Neo-arsphenamin by rectum is efficacious.

Intravenous Administration of Oil of Chenopodium for Hookworms.—Oil of chenopodium, injected intramuscularly, Lambert says, has little vermicidal action on hookworms, but in one case apparently had a marked action on whipworms. Oil of chenopodium, injected intravenously, in doses of from 1.5 to 2 c.c., in three cases apparently had a marked vermicidal action on *Trichuris*, little action on *Ascaris*, and none on hookworms. This finding suggested to Lambert that the intravenous injection of suitable anthelminthics may prove an effective method of removing these worms. In view of its crude form, the intravenous use of oil of chenopodium is not recommended as a routine treatment, but this method may be practicable with more refined products.

Serologic Reactions in Yellow Fever.—Serum from 183 cases of yellow fever, seventeen cases of other diseases and twenty-three normal persons was studied by Grovas for the purpose of determining the existence of specific agglutinins for *Leptospira icteroides*. The results showed that the serum of persons attacked by yellow fever acquires agglutinating properties for the leptospira which are demonstrable by the beginning of the second week of the disease. Serum from persons who had had yellow fever years previously usually gave negative reactions. Normal serum or serum from diseases other than yellow fever do not contain agglutinins for *Leptospira icteroides*. On the other hand, serum from recently vaccinated persons usually gives positive agglutination. The facility of the technic and the precision of the procedure makes it the choice for diagnosis. Agglutination by the serum is differentiated from spontaneous agglutination by being always accompanied by immobilization and frequently by lytic phenomena. The lysins probably appear in the serum at the same time as the agglutinins. Pfeiffer's reaction was constantly present in the serum from seventeen persons convalescent from yellow fever. It was negative in the serum from a case on the eighth day of illness. The immunizing property of the serum, as evidenced by a positive Pfeiffer

reaction against *Leptospira icteroides*, makes its appearance late, perhaps after the second week, being especially easy to demonstrate during convalescence. The Pfeiffer reaction is, therefore, of less practical applicability in diagnosis than agglutination, but it constitutes valuable confirmatory evidence of yellow fever. In Grovas' experience, complement fixation is subject to numerous sources of error, which deprive this reaction of all practical usefulness.

Archives of Neurology and Psychiatry, Chicago

10: 141-266 (Aug.) 1923

*Diencephalic Centers Controlling Associated Locomotor Movements. H. Mella, Boston.—p. 141.
*Value of Ventriculography. Experience Based on Forty Cases. F. C. Grant, Philadelphia.—p. 154.
*Xanthochromia and Increased Protein in Spinal Fluid Above Tumors of Cauda Equina. H. Cushing and J. B. Ayer, Boston.—p. 167.
*Concussion of Spinal Cord with Clinical Picture of Amyotrophic Lateral Sclerosis. G. B. Hassin, Chicago.—p. 194.
*Spontaneous Cerebral Lesions in Monkeys: Their Significance in Experimental Pathology. B. Lucke, Philadelphia.—p. 212.
*Chronic Intestinal Amebiasis: Special Reference to Neuropsychiatric Manifestations. H. W. Wright, San Francisco.—p. 228.
Intercostal Nerve Variations. H. J. Prentiss, Iowa City, Iowa.—p. 232.

Diencephalic Centers Controlling Associated Motor Movements.—Ablation experiments made by Mella on cats seem to show that in the subthalamic region is an area which, when removed, causes cessation of the automatic locomotor movements associating the fore and hind legs. When this area is left intact in decorticate preparations these movements are present. Serial transections with observations on the locomotor movements, show that the area controlling this function lies from 5 to 10 mm. cephalad to the tentorium. Here the only structures found consistently are the body of Luys and certain characteristic motor cells.

Value of Ventriculography.—In fifteen of forty cases examined by Grant the localization by the ventriculogram was exact. In eight others the localization, while unconfirmed, seems most probably correct. In four cases the ventriculogram proved to be entirely misleading, owing to errors in technic. In three cases the possibility of tumor was excluded by this means. In three cases, owing to an error in technic, Grant was not able to demonstrate the air on the roentgenogram after injection into the ventricles. Two patients have had a ventriculogram made and the diagnosis seems clear. Five patients died, a mortality of 12 per cent.

Xanthochromia and Increased Protein in Spinal Fluid Above Caudal Tumors.—The diagnosis of caudal tumors on the basis of their neurologic symptoms alone Cushing and Ayer point out is not always easy. The determining factor may be the cerebrospinal fluid findings. It is well known that the fluid caudad to a tumor shows marked pathologic changes generally attributed to stasis and transudation into a closed cavity, but similar changes, though of less degree, are present in the fluid cephalad to the tumor. In the five cases reported, these fluids have all shown xanthochromia and excess of protein with the practical absence of nucleated cells.

Concussion of Spinal Cord.—Hassin records the case of a man, aged 60, who tripped on a wire and fell, striking the right shoulder and almost "going head over heels." He evidently did not lose consciousness for he got up and went to work, though he felt sharp pain in the "upper spine." About four weeks later he noticed weakness in the right hand; five months after the injury, there was weakness in the left hand, and eleven months after the accident the legs became weak. The weakness was accompanied by wasting and some difficulty in walking (he could not run up stairs or walk rapidly). There was no complaint of pain, headache or vertigo, nor of gastro-intestinal, genito-urinary, deglutitional, speech or visual disturbance. The diagnosis lay between amyotrophic lateral sclerosis and trauma of the vertebral column secondarily involving the spinal cord. The clinical findings and the history pointed strongly to pressure on the spinal cord by a callus formation of the fourth or fifth cervical vertebra, though the possibility of amyotrophic lateral sclerosis was considered. Laminectomy was performed. No evidences of fracture or dislocation nor of a dural lesion were found, except a line of roughening on the inner aspect of the lamina of the fourth cervical vertebra. The patient survived the operation, but left the hospital unimproved and two weeks later succumbed to pneumonia. The pathologic findings were widespread degeneration of the ventral horns with the formation of microscopic foci of softening, especially in the lower portion of the cervical enlargement of the spinal cord; secondary degeneration of some fibers of the crossed pyramidal tract, lateral limiting zone and the adjacent portion of Gowers' tract.

Spontaneous Cerebral Lesions in Monkeys.—Histopathologic study made by Lucke of the brains from twenty-two apes and monkeys disclosed in nine animals lesions similar to those found in man. Of particular interest was the occurrence, in three animals, of nonsuppurative meningo-encephalitis, resembling the lesions of epidemic encephalitis, acute poliomyelitis and certain other diseases. Cerebral arteriosclerosis occurred in four animals, in two of which marked calcification of the vessels and focal areas of necrosis and gliosis were present. In one animal a solitary tubercle was found in the pons. In two animals acute suppurative meningo-encephalitis was present; this was associated in one case with a pontile abscess. The conclusion is reached that the interpretation of cerebral lesions in "experimental" monkeys requires caution, since definite "spontaneous" changes were found in more than 40 per cent. of the animals studied.

Chronic Intestinal Amebiasis.—Twenty-five cases of amebic infection with *Endameba hystolytica* had the following syndromes in order of frequency: (1) neurasthenic syndrome with mental depression; (2) toxic syndrome with myocardial irritability simulating hyperthyroidism; (3) polyneuritic syndrome; (4) arthritic syndrome with reflex nerve pains and deposits in the foramina of the vertebrae. All presented gastro-intestinal syndromes characterized by poor appetite, flatulence and chronic constipation, with occasional diarrhea.

Boston Medical and Surgical Journal

188: 91-124 (July 19) 1923

*Treatment of Heart Disease. W. H. Robey, Boston.—p. 91.
Uterine Fibromyoma: Compilation of End-Results in Three Hundred Cases Treated by Operation. P. E. Truesdale, Fall River, Mass. —p. 97.
Measles in New Bedford. H. G. Rowell, New Bedford, Mass.—p. 101.

188: 219-268 (Aug. 16) 1923

Convulsive Toxemia of Pregnancy and Its Treatment. R. McPherson, New York.—p. 219.
*Basal Metabolism. III. Errors of Clinical Determination. W. H. Stoner, Philadelphia.—p. 232.
*Basal Metabolism. IV. Selection of Normal Standards. W. H. Stoner, Philadelphia.—p. 239.
*Basal Metabolism. V. Tables of Values of Dreyer's Formulas. W. H. Stoner, Philadelphia.

Treatment of Heart Disease.—Robey states that a patient with an anginal type of heart disease has taken sodium nitrite, three or four times a day, for the last fourteen years, and it has done nothing but good. An old lady who lived to be 86, and who had mild symptoms of angina pectoris, took spirits of glonoin every day for six years with considerable benefit. Patients with angina pectoris and failing heart power have never, in Robey's experience, had the progress stayed by digitalis.

Errors in Basal Metabolism Determination.—The various possible errors of the clinical determination of basal metabolic rate are evaluated and discussed by Stoner from the standpoint of minimizing or eliminating them. The errors of greatest magnitude are those of faulty preparation of the subject.

Normal Standards of Basal Metabolism.—The standards of Harris and Benedict and of Dreyer are recommended by Stoner for adults of both sexes and for male children. For girls below 12, the standards of Benedict and Talbot, and for those from 12 to 18, the standards of Benedict are recommended. Hybrid, conciliatory, arbitration standards are condemned. More important than the choice of a standard is the necessity, on account of the wide variation in the results obtained by calculation from the various standards, for the diagnostician to acquaint himself with these standards and to know which is used in the calculation of results reported to him.

Dreyer's Formulas Evaluated.—Dreyer's formulas for expected heat production based on age and weight and for

theoretic weight based on sitting height and chest circumference are reviewed by Stoner. Values of the formulas for expected heat production are tabulated for males from 16 to 80, and from weights 25 to 125 kilograms.

Indiana State Medical Association Journal, Ft. Wayne

16: 241-270 (Aug. 15) 1923

Hypertension and Nephritis. J. G. Carr, Chicago.—p. 241.
Laryngeal Diphtheria in Smaller Communities. B. N. Lingeman, Crawfordsville.—p. 248.
Streptococcus Hemolyticus Infection of Nose, Accessory Sinuses and Mastoid Cells. J. C. Boone, South Bend.—p. 249.
Drainage of Eyes. G. W. Spohn, Elkhart.—p. 250.

Iowa State Medical Society Journal, Des Moines

13: 325-364 (Aug. 15) 1923

Treatment of Diabetes with Insulin. E. B. Winnett, Des Moines.—p. 325.
Public Health Legislation. Needs of State. R. P. Fagen, Des Moines.—p. 327.
Postoperative Comfort in Tonsil Cases. G. F. Harkness and J. E. Rock, Davenport.—p. 331.
Muscle Rigidity. Its Diagnostic Value. C. A. Boice, Washington.—p. 335.
Fracture of Patella. J. L. Augustine, Ladora.—p. 339.
Responsibility of Health Officer in Protecting Public Water Supply. J. J. Hinman, Jr., Iowa City.—p. 343.
Fat Reactions in Appendicitis and Cholecystitis. A. Kolodny, Iowa City.—p. 346.
Fistula of Rectum. C. J. Drueck, Chicago.—p. 350.
Surgical Aspects of Uterine Malpositions. J. A. Pettit, Portland, Ore.—p. 352.

Journal of Comparative Psychology, Baltimore

2: 431-509 (Dec.) 1922

*Effects of Cigar and Cigaret Smoking on Certain Psychologic and Physiologic Functions. II. Blood Pressure and Heart Rate. R. L. Bates, Baltimore.—p. 431.

3: 147-239 (June) 1923

Performances in Certain Mental Tests of Children Classified as Underweight and Normal. E. E. Nicholls.—p. 147.
Comparison of Certain Mental and Physical Measurements of School Children and College Students. E. M. Stalnaker.—p. 181.

Effect of Cigar and Cigaret Smoking on Blood Pressure and Heart Rate.—According to Bates the effects on healthy young adults of smoking a cigar or three cigarets, are to produce a rise in systolic and diastolic blood pressure and in heart rate. This rise varies in amount and in rapidity, from reactor to reactor, and from day to day for the same reactor. The rises in blood pressure usually amount to only a few millimeters above the previous average level, and are in almost all cases less than ten, but may in some cases be over twenty millimeters. The rise in heart rate is irregular; less than ten per minute in most cases, but may be as much as twenty. The normal irregular variations in blood pressure, due to various causes, are practically as great as the variations which may be ascribed to tobacco, but the normal variations in heart rate are less significant than the tobacco effects. The blood pressure and heart rate subside to "normal" in from twenty to thirty minutes. In some cases this subsidence occurs before the finishing of the cigar or cigarets; in other cases, the decline does not appear, and the rise may even be continued for some minutes after the cessation of smoking. In other cases, the cessation of smoking is marked by an immediate decline in blood pressures and heart rate. While it seems probable that the time elapsing after the beginning of smoking is a more important factor than the discontinuance, this cannot be clearly made out from the records so far obtained. How far this effect is due to absorbed smoke products, and how much to the psychologic factors involved in the smoking process, remains to be discovered.

Journal of Immunology, Baltimore

8: 239-321 (July) 1923

Some Relations Between Hydrogen Ion Concentration and Antigenic Properties of Proteins. I. S. Falk and M. F. Caulfield, New Haven, Conn.—p. 239.
Complement Deficient Guinea-Pig Serum. R. R. Hyde, Baltimore.—p. 267.
Studies in Specific Hypersensitiveness. Relative Susceptibility of American Indian Race and White Race to Poison Ivy. O. Deibert, E. F. Menger and A. M. Wigglesworth, New York.—p. 287.
*Biochemic Race Index of Koreans, Manchus and Japanese. H. Fukamachi, Fukuoka, Japan.—p. 291.
*Vaccine Treatment of Asthma. F. M. Rackemann and L. B. Graham, Boston.—p. 295.
Serologic Reactions in Isolated Rabbit Lungs. I. Reaction to Histamin and to Vaughan's Protein Split Product. W. H. Manwaring and H. D. Marino, Palo Alto, Calif.—p. 317.

Biochemic Race Index of Koreans, Manchus and Japanese.—Fukamachi's work shows that Koreans are of intermediate type (of Hirschfeld), though not far from the Asio-African type. Manchus belong to the Asio-African type. The Japanese belong to an intermediate type that is quite different from that of the Koreans and Manchus. The biochemical race index gradually decreases in Japan from south to north.

Vaccine Treatment of Asthma.—The method of making autogenous vaccines and of treating patients with emphysema, chronic bronchitis and with bacterial asthma is described by Rackemann and Graham. Ninety patients have been treated with autogenous vaccines. A predominating organism was found and used in twenty-nine cases, with good results in eleven and fair results in eleven. In sixty-one cases there was no predominating organism, but a selection from several autogenous vaccines was made on the basis of the local reactions following the test dose. Good results occurred in thirteen and fair results in fourteen. Forty-one patients have been treated with stock vaccines likewise selected on the basis of the local reactions, with good results in sixteen and fair results in twelve. Whatever vaccine is used, good results occured only in those cases in which the various doses of the vaccine were followed by local reactions at the site of inoculation. The importance of the local reaction plus the fact that the results with stock vaccines are as good or better than those with autogenous vaccines gives rise to the impression that the action of all vaccines in asthma is nonspecific. Of the entire series of 131 patients, nine have been "cured"; thirty-one have been definitely benefited; thirteen have been relieved temporarily, but fifty-four have not been relieved at all.

Journal of Industrial Hygiene, Boston

5: 109-148 (Aug.) 1923

*Carbon Monoxid Asphyxia: Artificial Respiration. C. K. Drinker, K. R. Drinker, L. A. Shaw and A. C. Redfield.—p. 109.
*Final Report of Commission on Resuscitation from Carbon Monoxid Asphyxia. Treatment of Carbon Monoxid Asphyxia.—p. 125.
Mental Factors in Industrial Hygiene. C. Macfie Campbell.—p. 130.
Phagocytosis of Lead Compounds and Their Influence on Activity of Leukocyte. J. Fine.—p. 138.

Carbon Monoxid Asphyxia.—The possibility that acute cardiac dilatation and failure of the right ventricle may occur in subjects poisoned by illuminating gas as a result of excessive artificial respiration by positive pressure apparatus (pulmotor and lungmotor) has been tested by the Drinkers et al. on cats. It is shown that no evidence as yet exists by which manual methods of artificial respiration can be evaluated in satisfactory physiologic terms. The probabilities are that the Schafer method is much more efficacious than is ordinarily believed. An account is given of attempts at artificial respiration on the bodies of persons, dead but a short time, and the impossibility of obtaining data on the efficiency of manual methods from such experiments is confirmed.

Resuscitation from Carbon Monoxid Asphyxia.—The Commission has found no evidence to indicate that artificial respiration apparatus operating by positive pressure, such as the lungmotor or the pulmotor, produces results in resuscitation from gas poisoning superior to those obtained by the use of the Schafer prone pressure method of resuscitation alone. The Commission is of the opinion that the employment of such devices may often do actual harm, and strongly recommends that the prone pressure method be employed. The Commission recommends the use of the carbon dioxid-oxygen inhalations developed by Henderson and Haggard as a treatment for gas poisoning.

Journal of Infectious Diseases, Chicago

33: 113-192 (Aug.) 1923

Acid Agglutination of Paratyphoid Bacilli. W. E. Gouwens, Chicago.—p. 113.
*Diphtheric Vaginitis in Children. A. L. Van Saun, New Haven, Conn.—p. 124.
Studies on Yeast. VI. Continuous Growth of Saccharomyces Cerevisiae in Synthetic Mediums. E. I. Fulmer and V. E. Nelson, Ames, Iowa.—p. 130.

*Studies of Fusiform Bacilli and Spirochetes. IV. Occurrence in Tonsils and Adenoids. I. Pilot and J. Brams, Chicago.—p. 134.
*Studies in Fusiform Bacilli and Spirochetes. V. Occurrence in Otitis Media Chronica. I. Pilot and S. J. Pearlman, Chicago.—p. 139.
Appearance and Persistence of Typhoid Agglutinins in Rabbits. T. D. Beckwith and E. M. Jones, Berkeley, Calif.—p. 142.
*Life Cycle of Bacillus Fusiformis. R. Tunnicliff, Chicago.—p. 147.
Streptococci of Feces and Mouth of Cows. V. Studies of Streptococci. S. H. Ayers and C. S. Mudge, Washington, D. C.—p. 155.
Diplococcus Associated with Caseous Lymphadenitis and Pneumonia of Sheep. R. S. Spray, Chicago.—p. 161.
*Agglutination Studies of Clostridium Botulinum. W. A. Starin and G. M. Dack, Chicago.—p. 169.
Anticomplementary Action of Fresh Bovine Serum. I. F. Huddleson, East Lansing, Mich.—p. 184.

Diphtheric Vaginitis in Children.—A search made by Van Suan of the available literature for the last thirty years yielded only twenty-six cases of diphtheric vaginitis in children. Primary diphtheria of the vagina is said to have occurred but six times in the series, and in some of these cases it was not quite clear that a more extended examination might not have revealed another avenue of infection. Apparently, bacteriologic examinations were made in fifteen of the cases; virulence tests were made in but six of these. A number of the cases occurred in children physically below par. The mortality does not seem to have been higher in diphtheric vaginitis than in other forms of diphtheria. Four deaths were reported in the series collected. The duration of the disease would seem to have been anywhere from one to four weeks, as a rule. One additional case is reported.

Fusiform Bacilli in Tonsils.—Fusiform bacilli were found by Pilot and Brams in the extirpated tonsils of eighty-two of 100 children, and in fifteen of forty-six adenoids. Spirochetes appeared in 25 per cent. of the tonsils, especially in the actinomyces-like granules. In the adenoids, they were demonstrated in only two instances. Associated with them in both tonsils and adenoids were streptococci of the hemolytic and viridans types, and other bacteria.

Bacteriology of Chronic Otitis Media.—In the chronic fetid discharges form the middle ear Pilot and Pearlman found fusiform bacilli, spirochetes together with streptococci, pneumococci and diphtheroids. Nonfetid discharge did not harbor the bacilli and spirochetes. The fusiform bacilli and spirochetes appeared identical with those about normal teeth, tonsils, adenoids and in putrid infections of the mouth and lungs.

Life Cycle of Bacillus Fusiformis.—The pure culture of *Bacillus fusiformis* under observation by Tunnicliff was extremely pleomorphic, forming straight and wavy, nonmotile threads of various lengths, the bacilli and filaments staining blue with Giemsa stain, and bodies inside the organism bright pink. Under certain conditions these bodies appear to fall out of the threads and develop into motile spirilla with from one to ten curves; or more frequently the spirilla develop from the bodies in the interior of the cell and later emerge from the end of the thread, or the filament ruptures leaving them free. The spirillum now seems to degenerate, and when stained with Giemsa shows both within and without elongated, slightly pointed blue bodies containing deeply staining granules at their ends, resembling short the fusiform bacilli seen in early cultures. The spirillar and bacillary cycles appear to be connected also by a symplastic stage, when a mass of bodies is formed due to changes in the organisms, from which bacilli and threads emerge. These observations tend to confirm the theory that fusiform bacilli and spirilla are different forms in the life cycle of one organism.

Agglutination Studies of Claustridium Botulinum.—The immunization of rabbits by young vegetative cells of *Cl. botulinum*, *Cl. sporogenes*, and *Cl. putrificum*, Starin and Dack assert, results in the formation of specific agglutinins, three intraperitoneal injections being sufficient to call forth a considerable amount of agglutinins. Similar injections of rabbits with spores of these strains did not result in the production of agglutinins. Rabbits tolerate the injection of vegetative cells well, but the injections of spores, detoxified so as to be harmless for mice, result in the death of a large proportion of the rabbits after from five to seven injections. From the bodies of the animals that died, it was possible to isolate cultures which were morphologically, culturally, and in the matter of toxin production, identical with *Cl. botulinum*.

Journal of Metabolic Research, Morristown, N. J.

3:1-199 (Jan.) 1923

Effect of Purification of Casein on Its Food Value. C. Funk, J. B. Paton and L. Freedman, New York.—p. 1.
*Insulin. 2. Influence of Carbohydrate and Protein on Diabetes and Insulin Requirement. J. W. Sherrill, Morristown.—p. 13.
*Insulin. 3. Influence of Fat and Total Calories on Diabetes and Insulin Requirement. F. M. Allen, Morristown.—p. 61.
*Possible Sources of Insulin. C. H. Best and D. A. Scott, Toronto.—p. 177.
*Effect of Germanium Dioxid on Blood. J. H. Muller and M. S. Izard, Philadelphia.—p. 181.

Influence of Carbohydrate and Protein on Insulin Requirement in Diabetics.—Sherrill reports a series of experiments concerning the insulin requirement of diabetic patients as modified by additions, withdrawals and substitutions of foods, particularly carbohydrate and protein. Apparently carbohydrate has a stronger glycosuriac effect and creates a higher insulin requirement than the caloric equivalent of any other kind of food. Protein ranks below performed carbohydrate in respect to glycosuric effect and insulin requirement when the substitution is made on a basis of either equal caloric value or theoretical glucose content. Though hypoglycemia may be prevented by sufficiently large quantities of protein, this influence is surprisingly feeble and by no means in proportion to the theoretical glucose value. Assumption of a specially powerful glycosuric influence of protein, on the ground either of its specific dynamic or a supposed toxic action, is thus proved to be contrary to fact. There is no constant scale of insulin dosage for the assimilation of any given quantity of carbohydrate. The ratio between grams of glucose and units of insulin varies widely not only in different patients but also in the same patient under different conditions. Glycosuria and insulin requirement are governed to a very important degree by the total caloric value of the diet.

Influence of Fat on Insulin Requirement in Diabetes.—According to Allen, the insulin requirement of the organism is governed not only by carbohydrate but also by fat and all other elements entering into the diet or metabolism. It remains uncertain whether insulin is directly concerned in total metabolism, or whether it is specifically related to the assimilation of glucose alone and only in some secondary or indirect manner with the metabolism of other foods. It can only be said that the body cells somehow require insulin for their nutrition and consume it at a rather rapid rate in their life processes. Its anabolic function is probably as important as its catabolic function. The minimum insulin requirement compatible with sugar freedom may apparently be as low as 4 units per day in a young child, but is probably 12 units or more for an adult. The need for insulin is related quantitatively to the body mass as well as to the amount of food to be metabolized. Under comparable conditions of nutrition, the insulin requirement of children is lower absolutely but higher per kilogram than that of adults. The maximum insulin requirement is created by temporary emergencies, such as infection or acidosis, from causes which are not understood. The maximum ordinary requirement is created by luxus diets and increases of weight. The experiments showing the influence of fat, total calories and body weight on the insulin requirement confirm in all details the investigations on which the undernutrition treatment of diabetes was founded. The theoretical position is thus strengthened on both sides. On the one hand, the undernutrition treatment is justified as against opposed dietary proposals. On the other hand, the exact correspondence of the results with insulin to the former modifications of tolerance by diet supports the belief that insulin is the true internal secretion of the pancreas and that diabetes is due solely to a deficiency of insulin.

Possible Sources of Insulin.—The authors' experiments tend to show that a chemical body resembling insulin, so far as the effect on the blood sugar of normal rabbits is concerned, is present in vegetable material. In collaboration with Banting, the authors have been able to obtain an insulin-like material in considerable quantities from the blood of the ox, dog, rabbit and man.

Effect of Germanium Dioxid on Blood.—Chemical and spectroscopic analyses lead Muller and Iszard to the belief that germanium dioxid injected into the system is reduced to

the monoxid in the tissues of the animal, probably resulting in the addition of germanous oxid to the hemoglobin of the cells of the venous blood. Subsequent oxygenation of such blood in the lungs then releases the germanium from the cells by converting it into the dioxid, and anhydrid of an acid comparable with carbonic acid, but nonvolatile. The latter appears simply to dissolve in the plasma, where it is forced to remain and return to the tissues with the arterial blood. Here reduction very likely again takes place, reproducing germanous oxid and completing the cycle. These reactions, if true, plainly indicate that germanium in the blood stream may act as an oxygen carrier, and explain in part the physiologic effect which this element produces in the animal system, resulting in erythropoiesis.

Journal of Parasitology, Urbana, Ill.

9: 183-252 (June) 1923

Life History of New Schistosome, Schistosomatium Pathlocopticum Tanabe, Found in Experimentally Infected Mice. B. Tanabe, Boston.—p. 183.
Morphology and Life History of Herptomonas Muscae-Domesticae in North American Muscoid Flies. E. R. Becker, Baltimore.—p. 199.
Occurrence of Taenia Saginata in North China. R. G. Mills, Peking, China.—p. 214.
*New Type of Ameba (Caudamoeba Sinensis) Parasitic in Man Observed in North China. E. C. Faust, Peking, China.—p. 221.
Larval Characters in Genus Sarcophaga. F. M. Root, Baltimore.—p. 227.
Complement Fixation Test of Schistosomatium Pathlocopticum and Its Group Reaction with Schistosoma Japonicum. B. Tanabe, Boston.—p. 230.
Occurrence of Ancylostema Braziliense De Faria 1910 in Philippine Islands. S. T. Darling.—p. 234.

New Parasitic Ameba in Man.—A new ameba from man is described by Faust. He proposes the name *Caudamoeba sinensis*, nov. gen. nov. spec. The organism was found in material from four dysentery patients. It is phagocytic for red blood corpuscles and for bacteria and in two instances was the only micro-organism in the stool suspected of being pathogenic. Cases containing only this organism in the stools gave a typical history and manifested symptoms of amebic dysentery. Emetin is a specific for the infection. The organism succumbs in the course of a few treatments and does not reappear in the stool after a course of treatments. In this respect it is apparently more amenable to treatment than *Endameba dysenteriae*.

Kansas Medical Society Journal, Topeka

23: 201-234 (Aug.) 1923

End Results of Suprapubic Prostatectomy. V. C. Hunt, Rochester, Minn.—p. 201.
High Blood Pressure in Pregnancy: Etiologic Factors. M. W. Hall, Wichita.—p. 204.
Fundamentals of Basal Metabolism. R. L. Haden, Kansas City, Kan.—p. 207.
Aids in Diagnosis. J. T. Scott, St. John.—p. 211.

Laryngoscope, St. Louis

33: 483-564 (July) 1923

Clinical Studies of Vestibular and Auditory Tests in Intracranial Surgery. W. P. Eagleston, Newark, N. J.—p. 483.
Prevalence of Hay-Fever. William Scheppegrell, New Orleans.—p. 535.

Maine Medical Association Journal, Portland

13: 299-322 (July) 1923

Physician of Future. E. R. Kelley.—p. 299.

Mental Hygiene, Albany, N. Y.

7: 449-672 (July) 1923

Colony and Parole Care for Dependents and Defectives. C. Bernstein, Rome, N. Y.—p. 449.
Delinquency and ex-Soldier. W. F. Lorenz, Mendota, Wis.—p. 472.
More Community Aspects of Feeblemindedness. G. Hamilton, New York.—p. 485.
Classification of Mental Defectives. H. W. Potter, New York.—p. 509.
Neuropsychiatric Work in Industry. A. Scott, New York.—p. 521.
Education of Nurse in Principles of Mental Hygiene. J. P. Wilkinson, Weare, N. H.—p. 538.
General Paralysis in State Hospitals for Mental Disease. E. M. Furbush.—p. 565.
Study of One Hundred Feebleminded Girls with Mental Rating of Eleven Years or Over. G. L. Wallace, Wrentham, Mass.—p. 579.
Mental Hygiene Work in England. M. J. Powers, New York.—p. 588.
Defective Child—What Can Be Done for It. N. L. Perkins, Detroit.—p. 595.

Michigan State Medical Society Journal, Grand Rapids

23: 323-382 (Aug.) 1923

*Survey of Thyroid Enlargement Among the School Children of Grand Rapids. T. Reed, Grand Rapids.—p. 323.
Venereal Prophylaxis. E. S. Browning, Grand Rapids.—p. 325.
Future of Medicine. H. B. Britton, Ann Arbor, Mich.—p. 328.
Relation of Edentulous Jaws to Systemic Disease. C. A. Teifer and J. F. Wood, Muskegon.—p. 332.
Significance of Appendiceal Stasis as Demonstrated by Barium Meal. W. A. Evans, Detroit.—p. 334.
Personal Experiences with Infantile Paralysis. R. G. Tuck, Brown City.—p. 338.

Survey of Thyroid Enlargement in Michigan.—The general prevalence of enlargement of the thyroid among the school children of Grand Rapids was not appreciated until Reed and Clay completed their survey. Thirty per cent. of the children examined were found to have enlargement ot the thyroid. It was twice as common among girls as among boys. The health department of Grand Rapids feels that goiter prevention is a public health measure; that being of interest to the general public health, it can, therefore, best be taken care of by public health officials through the organization of public school nurses and physicians. Consequently, the school children of Grand Rapids are at present being given tablets containing iodin.

Minnesota Medicine, St. Paul

6: 431-472 (July) 1923

Orthopedic Surgery of Upper Extremity. A. Steindler, Iowa City, Iowa.—p. 431.
Clinical and Laboratory Study of Hypertension. E. L. Gardner, Minneapolis.—p. 436.
Sheppard-Towner Bill as Administered in Minnesota by State Board of Health Division of Child Hygiene. E. C. Hartley, Minneapolis.—p. 442.
Interrelation of Gynecology and Urology. H. M. N. Wynne, Minneapolis.—p. 445.
Obstetrics (One Thousand Cases), as Seen by Country Practitioner. A. Kuhlmann, Melrose.—p. 449.
Cerebral Pneumography as Aid in Early Diagnosis of Hydrocephalus. O. S. Wyatt, Minneapolis.—p. 454.
Epilepsy: Its Present Status. W. H. Hengstler, St. Paul.—p. 457.

6: 473-522 (Aug.) 1923

Unusual Findings in Roentgenography of Head. C. C. Sutherland, Rochester, Minn.—p. 473.
*Meckel's Diverticulum as Etiologic Factor in Intestinal Obstruction: Report of Three Cases. J. A. Johnson, Minneapolis.—p. 479.
*Functional Tests in Heart Disease. T. Ziskin, Minneapolis.—p. 484.
*Tuberculosis of Epididymis. S. R. Maxeiner and R. H. Waldschmidt, Minneapolis.—p. 492.
Tuberculosis in School Children. J. A. Myers, Minneapolis.—p. 497.
Hypothyroidism. A. M. Snell, Mankato, Minn.—p. 503.
Surgical Relief of Dysmenorrhea. C. C. Kennedy, Minneapolis.—p. 507.

Meckel's Diverticulum Causes Intestinal Obstruction.—Johnson reports three cases. In one case a Meckel's diverticulum was found about 18 inches from the ileocecal junction. The tip of this and a fibrous band had become adherent to the root of the mesentery just above the promontory of the sacrum. A loop of small intestine had passed under this band and had become obstructed. In the second case a Meckel's diverticulum was adherent to the ileum sac of an inguinal hernia, causing angulation of the ileum with obstruction. In the third case a band from a Meckel's diverticulum was adherent to the ileum. The band and diverticulum being drawn in by a peristaltic wave caused intussusception and obstruction. Johnson asserts that Meckel's diverticulum is probably an etiologic factor in more than 2 per cent. of all mechanical obstructions.

Functional Tests in Heart Disease.—The majority of tests devised to determine the efficiency of the heart, Ziskin says, are of little value. The only functional test at present is the patient himself. A thorough study of the history and symptoms of the case, together with a complete physical examination, will give more information as to the functional capacity of the heart than all tests combined.

Tuberculosis of Epididymis.—Fifteen cases of tuberculosis of the epididymis are reported by Maxeiner and Waldschmidt. Ten showed extragenital tuberculosis before the operation. The average duration of symptoms was nine and one-half months before operation. Pain was present in thirteen cases. In twelve cases, the first symptoms arose in the lower pole of the epididymis. Ten cases were bilateral. In five cases,

one testis was so badly involved that it had to be removed. Eight patients report their general health to be improved, while seven report their general condition unchanged. One patient had tuberculosis of one kidney, which was removed before the operation on the testis. A second patient developed tuberculosis of both kidneys postoperatively. Treatment should be general, as well as local.

Missouri State Medical Association Journal, St. Louis

20: 263-302 (Aug.) 1923

*Chronic Pneumonitis Following Influenza. A. L. Anderson, Springfield.—p. 263.
Mobilization of Ankylosed Joints by Operation. F. D. Dickson, Kansas City.—p. 266.
Prevention of Deformities in Acute Surgical Lesions in Children. W. R. Rainey, St. Louis.—p. 271.
Some Practical Points in Handling of Malnutrition in Older Children. B. S. Veeder, St. Louis.—p. 276.
Some Obstetric Problems. F. T. Van Eman, Kansas City.—p. 278.
Gastric Hyperacidity as Etiologic Factor in Pyorrhea Alveolaris. J. I. Tyree, Joplin.—p. 281.
Recognition and Treatment of Postoperative Complications. F. W. Bailey, St. Louis.—p. 285.

Chronic Pneumonitis Following Influenza.—Anderson discusses cases which so far as history and physical examination are concerned apparently are cases of tuberculosis. But on further observation, this impression is not confirmed by finding tubercle bacilli in the sputum or by the course of the complaint. All of these patients give a history of having had influenza, and in most of the cases, pneumonia followed. Some of them had been having pulmonary and heart symptoms from two to three years. They complained of weakness, shortness of breath, especially on exertion, nervousness, pains in the chest and coughing, the last symptom varying in intensity. Some had only a slight morning cough associated at times with hoarseness and raising but little sputum; while others had rather a distressing cough through the day, with considerable amount of sputum. Sometimes this would be streaked with blood, but in none had the sputum ever been found positive for tubercle bacilli. The general appearance of the patients varied. Some had maintained normal body weight, while others had lost considerably and appeared undernourished. Anderson urges that careful examinations be made in these cases to avoid error in diagnosis.

New Jersey Medical Society Journal, Orange

10: 253-288 (Aug.) 1923

Insulin Therapy. M. J. Synnott, Montclair.—p. 253.
Principals of Deep Roentgen-Ray Therapy. J. Roemer, Paterson.—p. 255.
Causes and Prevention of Deformities of Pelvis. B. F. Busby, Camden.—p. 257.
Cancer of Pancreas; Report of Cases. H. I. Goldstein, Camden.—p. 262.
Lobar Pneumonia. A. B. Doches, New York City.—p. 274.
Medicinal Treatment of High Blood Pressure. C. G. Cumston, Geneva, Switzerland.—p. 276.

New York Medical Journal and Medical Record, New York

113: 73-132 (July 18) 1923

Acrodermatitis Chronica Atrophicans and Its Relation to Scleroderma. F. Wise, New York.—p. 73.
*Study of Death of Full-Time Extrauterine Fetus in Situ and Its Scientific Value. J. Oliver, London, Eng.—p. 81.
Case of Primary Sarcoma of Spleen. H. C. W. DeBrun, New York.—p. 85.
Cell Ionization and Its Relation to Malignant Neoplasms. D. C. A. Butts, Philadelphia.—p. 89.
Medical Education and Some Medical Views Abroad. J. S. Diamond, New York.—p. 93.
Gravity Method of Blood Transfusion. T. L. Fisk, New York.—p. 981.
*Miliary Carcinosis. E. H. Funk and B. L. Crawford, Philadelphia.—p. 101.
Significance of Gastro-intestinal Disturbances in Early Pulmonary Tuberculosis. S. A. Savitz, Philadelphia.—p. 104.
Antibody Relationship of Members of Streptococcus and Bacillus Coli Groups. J. F. Anderson and W. B. Ellinger, New Brunswick, N. J.—p. 105.
Repairing the Human Machine. F. C. Elton, New York.—p. 107.
Why Does not Prohibition Prohibit? S. D. Hubbard, New York.—p. 108.

Relation of Extra-Uterine Fetus to Its Placenta.—Supporters of the mechanical theory of the functioning of the placenta allege that by the physical laws of diffusion, filtration and osmosis all the nutrient processes occurring through the placenta can be understood and explained. Oliver, on the contrary, maintains that even the passage of the diffusible mineral substances which the fetus requires cannot be accounted for by physical laws, because the specific needs of the embryo for growth and development are very different from the nutrient needs of the mother, and because the relative proportions of the mineral and other substances circulating in the mother's blood are very different from the relative proportions which the placenta is required to furnish for the development and growth of the fetus. The mere fact that certain substances capable of filtration when thrown into the blood of the mother pass into the circulation of the fetus, is no criterion, but a careful study of the conditions, as a whole, as they obtain in the case of the full time extra-uterine fetus in its relation to its placenta is of the greatest scientific value.

Miliary Carcinosis.—The clinical history and physical findings in the case cited by Funk and Crawford suggested an acute tuberculosis either of the localized type known as acute bronchopneumonic tuberculosis or the pulmonic form of acute miliary tuberculosis. At the necropsy, instead of finding miliary tuberculosis, the lesions present were those of a miliary carcinoma. The gross appearance of the lung was so like that of a miliary tuberculosis that at first glance it was considered tuberculous. A feature which caused some comment was the absence of any evidence of an old lesion of tuberculosis at the top of the lungs. On examining the other organs, however, especially the liver, the malignant character of these miliary nodules became apparent. In the liver they were somewhat larger, several approaching 0.5 to 1 cm. in diameter, rather sharply defined against the surrounding liver tissue, firm on section, and free from caseation. An ovarian cyst removed almost twenty months before might have had malignant changes. Sections revealed the changes of adenocarcinoma.

Philippine Journal of Science, Manila

23: 1-121 (July) 1923

Distribution of Dipterocarpaceae: Origin and Relationships of Philippine Flora and Causes of Differences Between Florals of Eastern and Western Malaysia. E. D. Merrill, Manila.—p. 1.
Life History of Horse Oxyurid (Oxyuris Equi). B. Schwartz.—p. 35.
*Metabolism Experiments with Filipino Students in United States. F. O. Santos, New Haven, Conn.—p. 51.
Philippine Sharks. A. W. C. T. Herre, Manila.—p. 67.
New Philippine Paussid, Synonimical Notes on Pachyrrhynchus, and New Species of Latter. W. Schultze, Manila.—p. 77.
Night and Day Rates of Elongation of Banana Leaves. S. F. Trelease, Baltimore, Md.—p. 85.
Potassium Ferrocyanid as Reagent in Microscopic Qualitative Chemical Analysis of Common Alkaloids. H. I. Cole, Manila.—p. 97.
*Hookworm Disease: Clinical Entity in Philippine Islands. C. N. Leach, B. Schwartz, F. D. Leach and F. G. Haughwout, Manila.—p. 105.

Metabolism Experiments on Filipino Students.—Nitrogen metabolism experiments were conducted by Santos to find out whether it is possible for Filipinos who have resided one year or more in the United States and have become accustomed to American diet to remain in nitrogen equilibrium when given a Filipino diet of rice, fish, meat and vegetables. The four subjects showed positive nitrogen balances when given their native diet, and this diet as selected furnished enough calories for the nutritive equilibrium.

Hookworm Disease in Philippines.—The existence of hookworm disease in the Philippines is recorded by Leach et al. This appears not to have been done before. The incidence of hookworm infestation can be expected to vary from 40 to 90 per cent. in certain rural districts. In this paper discussion is limited to hookworm disease in Cebu. Of 125 patients admitted to hospital during November, 1922, forty-four were hookworm positive. Most of the cases presented a blood picture that might readily be mistaken for that of a primary anemia. No case presented an eosinophilia above 7 per cent. All patients received treatment with carbon tetrachlorid on the basis of 1 c.c. of the drug to each 5.5 kilograms of body weight. Aside from slight dizziness and drowsiness, none exhibited the slightest untoward effects from the treatment. A hypersecretion of mucus in the intestinal tract, persisting for a number of hours after the treatment, was noted in nearly every case. No delayed untoward effects from the drug were observed when all subjects were inspected five days after treatment.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 215-268 (Aug. 11) 1923

*Applications of Physiology to Medicine. II. Ventricular Fibrillation and Sudden Death. J. A. MacWilliam.—p. 215.
*Mental Deficiency in Its Social Aspects. W. A. Potts; E. F. Pinsent and others.—p. 219.
Segregation of Mental Defectives. H. Devine.—p. 224.
Sterilization of Mental Defectives. R. A. Gibbons.—p. 226.
Organization for Supervision of Mental Defectives. C. M. Campbell. —p. 229.
Heredity and Social Conditions Among Mentally Defective. F. Mott. —p. 230.

Cause of Death from Ventricular Fibrillation.—Death from ventricular fibrillation, according to MacWilliam, is due to a failure of the heart's action, essentially different from cardiac (or myocardial) failure, in the sense of exhaustion of the contractile power of the cardiac muscle; a verdict in the latter sense would usually be, in cases of sudden death, fallacious. While such exhaustion of contractility is of common occurrence in disease, it is a gradual process, leading to more and more marked impairment of the pumping power necessary to maintain a good circulation and of the power to respond to the increased demands of muscular exercise, etc. There is no ground for the assumption that a sudden loss of power can occur, that is, that muscular fibers endowed with contractility adequate for a tolerably good blood pressure and blood flow should abruptly become enfeebled or paralyzed, apart, of course, from the sudden action of violent poisons or such gross causes as asphyxia, obstruction of coronary supply, hemorrhage, etc. What really happens in the supervention of ventricular fibrillation is a misapplication of contractile energy; it is thrown away in a turmoil of fruitless activity, a disastrous change occurring in muscle that may be already more or less limited in power, or that may, on the other hand, be possessed of vigor more than sufficient for the ordinary needs of the circulation. This often occurs in a heart showing no failure of rhythmicity, excitability, or contractility.

Social Aspects of Mental Deficiency.—The importance of the subject of mental defect, in Pott's opinion, is not fully realized. The number of mental defectives is large and the problem is intimately interwoven with most social difficulties. In the control of venereal disease, mental defectives constitute one of the great difficulties, for they neither protect themselves against disease, nor realize the importance of treatment, especially of continuing it until the disease is cured. Chronic drunkenness, though not pathognomonic of mental defect, often claims as victims men and women whose judgment and self-control are so poorly developed as to constitute a form of feeblemindedness. Illegitimacy also is a problem that cannot be considered regardless of mental defect. In work with criminals and delinquents punishment cannot help those who require treatment or reeducation. In dealing with the problem of the unemployed, many of whom are said to be unemployable, one of the first steps should be to sort out the mentally defective. So, too, with war pensions and "shell shock" cases. Some of these are, always have been, and always will be mentally defective. The sooner these are weeded out the better for them and for those who, both by their past record and their future possibilities, are entitled to skilled and expensive treatment. Defectives always have existed, and always will exist. It is not certain that there is a bigger percentage than there used to be. It may only be that the circumstances and conditions of present civilization make them more obvious. The principal cause is heredity; therefore, segregation, even if only partial, will reduce the number. But heredity, although the outstanding cause, is not the only cause. The statistics which seemed at one time to lead almost inevitably to the conclusion that heredity was the only factor that mattered have been shown to have been unduly stressed. In some cases this was due to the fact that what was likely to be inherited was not mental defect, but a psychopathic make-up; in others, notably some of the American records, the figures were based not on scientific investigation, but on hearsay evidence obtained long after the unsatisfactory ancestor was dead. Those who have the care of the mentally defective and all other social workers must join hands to combat the racial poisons, syphilis and alcohol. Other known unfavorable agencies must not be forgotten, such as infectious disease of the mother during pregnancy. Toxins and bad environment must contribute in some cases to the incidence of mental defect. Once mental defect is established little can be done to eradicate it. The great opportunity is at the antenatal clinic. Highly skilled medical practitioners are essential there; in addition, a high standard of national health, especially among married women, must be achieved. It is in the school clinic that the opportunity occurs for recognizing and scheduling the pathologic or asocial child. The more efficient the supervision, the more thorough the early investigation, the fewer persons will have to be segregated later. The public must be taught that those who are segregated are being treated and not punished, that it is the only way in which they can lead happy and useful lives. The institutional life essential for them is arranged not only for their benefit, but also in the interests of their normal brothers and sisters, who are often seriously handicapped by the presence of a defective in the home or the school. Sterilization has always appeared to Potts an irrational procedure, because in nearly every case in which it could be justified the unfortunate defective must still be segregated; he is a menace to society in other ways than the breeding of other degenerates. The sterilized delinquent will go on stealing and giving trouble to the police. Feebleminded young women could not be sterilized and then turned loose to spread venereal disease broadcast.

Irish Journal of Medical Science, Dublin

5: 1-55 (July) 1923

*Rotunda Lying-In Hospital, Clinical Report for Year 1921-1922. G. FitzGibbon, J. S. Quin, and G. W. Theobald.—p. 1.

Obstetric Statistics from Rotunda Lying-In Hospital.—In the extern maternity of the Rotunda Lying-In Hospital, 2,021 women were attended in 1921-1922 during confinement; 152 were cases of abortion or miscarriage. There were eleven cases of placenta praevia; eight were central; one marginal, and two lateral, with no mortality; all were treated by bringing down a leg after version in those cases with a cephalic presentation. One case of concealed accidental hemorrhage ended fatally, the patient being dead on arrival of the assistant. Five cases of hemorrhage were treated by vaginal plugging, four were cases of accidental hemorrhage, one was a miscarriage. There were ten deaths postpartum, hemorrhage being the cause of five in cases in which the delivery of the infant was managed by midwives. One woman died of sepsis on the eleventh day after a normal delivery, another woman died on the fourth day after a protracted labor with marked inertia. One woman died of cardiac disease, having severe decompensation, and one died of a condition suggestive of pulmonary edema. In the intern maternity, 1,715 patients were confined, including forty-two abortions or miscarriages before the twenty-eighth week. Eight deaths occurred in the intern maternity. Two were from secondary abdominal pregnancies; two were due to putrid endometritis following unduly protracted labors; one death was due to double lobar pneumonia, and one each to cardiac disease, intestinal obstruction and rupture of the cervix and cardiac debility. Fifteen presentations were persistent occipitoposterior. There were five cases of face presentation. Brow presentation occurred twice. Transverse presentation was found in four single fetus gestations and in four cases of twins. In twelve cases the cord prolapsed; in three the fetus was dead. Version was done in twenty-two cases, seven for placenta praevia, three for prolapse of cord, eight for malpresentation, other than with twins in which transverse presentations were changed four times. Cephalic version was done in one primipara for a breech presentation with a medium degree of contracted pelvis, and once for breech presentation in the first of twins. Craniotomy was done three times, once for impacted face, once in a case of secondary abdominal pregnancy following rupture of the uterus early in pregnancy and once for posterior sacculation of the uterus following a ventral suspension in which the fundus had become firmly fixed. Perforation was done three times, once for hydrocephalic head associated with eclampsia,

once for toxemia with a very large fetus, and once for contracted pelvis and a breech presentation with complications. Evisceration was done in a case of prolapsed arm in a patient with eclampsia. There were 136 cases of definite pelvic contraction. Labor was terminated by the aid of pubiotomy in eight cases. A full analysis is made of all complications, of which there were many.

Japan Medical World, Tokyo

3: 153-180 (July 15) 1923

*Investigation of Pneumonic Plague. M. Tsurumi, C. Hara, M. Ima, T. Awok and T. Sakamoto.—p. 153.
*Action of Body Temperature on Testicle. N. Fukui.—p. 160.
On Centralizing the Control of Epidemics in Orient. T. Watabiki.—p. 163.

Pathology of Plague Pneumonia.—In nine out of thirteen instances studied by Tsurumi et al., the pathology of plague pneumonia was chiefly a hemorrhagic sero-exudation and in the remaining four instances it was a cellular exudation. The clinical progress of pneumonic plague is very rapid, death relieving the victim in less than eighty hours in all cases subjected to necropsy. This rapid progress is believed to be due to the virulent toxicity.

Action of Body Temperature on Testis.—The destruction and disappearance of the generative cells and hypertrophy of the interstitial tissues of the testes, Fukui says, are due to the action of heat in the local tissue, or in other words, the body temperature. In this he also finds the cause of the descent of the testis in mammals.

Journal of Biochemistry, Tokyo

3: 1-167 (July) 1923

Germicidal Action of Hydrosol of Copper. M. Kusunoki.—p. 1.
Fatty Acids Obtained from Cephalin. Compounds of Amino-ethyl Alcohol with Saturated and Unsaturated Fatty Acids. R. Koganei.—p. 15.
Effect of Calcium Oxid and Calcium Carbonate on the Decomposition of Soy Bean Cake and Herring Cake in Two Different Soils. K. Miyake and K. Nakamura.—p. 27.
Preparation of Testes Nucleic Acid. T. Tadokoro and T. Takahashi.—p. 55.
*Analytical Studies on Urinary Calculus. M. Iwano.—p. 67.
Studies on Phlorhizin Glycosuria. I. Phlorhizin Glycosuria and Renal Activity. T. Nagayama and T. Yokota.—p. 83.
*Studies on Some Factors in Coagulation of Blood. K. Kuwashima.—p. 91.
Splitting of Starch by Amylase. I. K. Harada.—p. 149.

Analysis of Urinary Calculi.—Four hundred and eighty-seven urinary calculi were analyzed chemically by Iwano and found to be composed chiefly of urate, phosphate, oxalate and carbonate of alkaline earth metals such as sodium, potassium, ammonium, calcium, and magnesium, and of cystin, though the latter was rarely found. In most cases, especially in phosphate and cystin calculi, the organic framework was always present, and when the mass of calculi was dissolved away in dilute mineral acid or alkali, it came out as loose floccuii. In a few cases some foreign bodies, such as straw, paper strings, cotton strings, wax and gauze were observed in the center of the concretions, apparently serving as a nucleus in the formation of the calculus. The peripheral part of such calculi mostly consisted of phosphate. As to the mode of mixture of each constituent composing the same calculus, the following points were noted. The phosphate existed in nearly all calculi except one, which was formed simply of uric acid or urate. The uric acid or urate was present alone or, when mixed, chiefly with oxalate or phosphate, but never with cystin and carbonate. The carbonate occurred in most cases as a calcium salt associated with the phosphate and always with its magnesium salt. The cystin was free or mixed with various amounts of phosphate and when the latter attained to a considerable amount, a trace of carbonate was sometimes present. Xanthin, indigo, carbonate, or cholesterol calculi were present in this series. Taking into consideration the structural and chemical properties of calculi, Iwano offers the following classification:

- Calculi
  - I. Nonlaminated calculi
    - a Simple calculi
      - 1. Uric acid (urate) calculi
      - 2. Phosphate calculi
    - b Mixed calculi
      - 3. Oxalate calculi
      - 4. Cystin calculi
  - II. Laminated calculi
  - III. Foreign body calculi

Factors in Coagulation of Blood.—The special effect of calcium for the activation of prothrombin into thrombin, Kuwashima says, is shared by strontium. Calcium accelerates the coagulation of blood not only through the activation of prothrombin into thrombin, but by promoting the formation of fibrin from fibrinogen by thrombin. Thrombin is stable at the temperature below the body temperature. Its activity is maximal at body temperature. The identification of tissue thromboplastic substance with kephalin was confirmed. Cholesterol exerts no influence on the coagulation of plasma. Cholic acid, in great amount, retards the coagulation both in the presence and absence of kephalin. Kephalin has no effect on the coagulation of fibrinogen by thrombin, but in large excess it tends to decrease the coagulation velocity.

Lancet, London

2: 267-316 (Aug. 11) 1923

Surgery of Thyroid. A. J. Walton.—p. 267.
*Etiology of Kala-Azar and Tropical Sore. B. Blacklock.—p. 273.
Kohler's Disease of Tarsal Scaphoid. H. H. Greenwood.—p. 274.
Symphysiotomy, Craniotomy and Cesarean Section. A. E. Chisholm.—p. 276.
Tuberculosis of Pericardium. E. W. Waller.—p. 278.
"Baker Eczema." A. R. Tankard.—p. 279.
Hernia of Vermiform Appendix Through Hesselbach's Triangle. M. W. Snodgrass.—p. 280.

Etiology of Kala-Azar and Tropical Sore.—Blacklock stresses the relation of plant bugs to kala-azar, because, he says, if these bugs, which live usually on plant juice and are capable of harboring flagellates in their gut and in their salivary glands, are able to bite man, it would be a strong argument for investigating their habits and bionomics before dismissing them from consideration in connection with kala-azar and tropical sore. A cotton stainer, which is apparently restricted very closely to certain species of food plant, is capable of biting man. The species of bug is *Dysdercus superstitiosus*. On dissecting specimens of this bug Blacklock found that they were heavily infected in various portions of the alimentary canal with a *Herpetomonas*. This protozoon was also found in one case in the celomic fluid.

Medical Journal of Australia, Sydney

2: 27-54 (July 14) 1923

*Investigation of Immunity Reactions in Hydatid Disease: Preliminary Report. K. D. Fairley.—p. 27.
*Case of Cerebral Aneurysm Simulating Meningitis. S. Gillies.—p. 37.
Acute Appendicitis with Lobar Pneumonia. A. Pryde.—p. 38.

2: 55-82 (July 21) 1923

Feeblemindedness and Delinquency. M. Gamble.—p. 55.
Hospital Problem in New South Wales. W. Epps.—p. 59.
Salpingitis with Sinus to Groin. H. H. Schlink.—p. 67.

Precipitin Test for Hydatid Disease.—A modified precipitin test is described by Fairley which gives results practically identical with those of the complement fixation test. An antigen that will keep satisfactorily, for some months at least, is readily prepared, while the technic of the test is so simple that it can easily be done without special preliminary laboratory training. The Casoni intradermal test bears no constant relation to the serologic tests, but is useful and often gives a positive reaction in patients with hydatid disease who have failed to react to the complement fixation and precipitin tests.

Cerebral Aneurysm Simulating Meningitis.—The case of cerebral aneurysm reported by Gillies seems worthy of record on account of its close simulation of recurring meningitis, the unusual site of the aneurysm on the base of the left side of the medulla, its recurring rupture, the localization of the headache as a spote on the left frontal region (the side of the aneurysm), the youth of the patient (22), the signs of stimulation of the pituitary body shown by polyuria and glycosuria, the gradual evolution of the signs of chronic nephritis during eight years from a condition compatible with the diagnosis adolescent albuminuria, the absence of discoverable cause for the progressive renal and vascular involvement.

South African Medical Record, Cape Town

21: 293-316 (July 14) 1923

Major Amputations. G. R. Thomson.—p. 295.
Genital Prolapse. R. L. Impey.—p. 296.

Tubercle, London

61: 481-528 (Aug.) 1923

Tuberculosis in Indiana. C. A. Sprawson.—p. 481.
*New Graphic System of Lung Signs. J. Somme.—p. 488.
Ten Years' Experience of Sanatorium Benefit. J. D. Macfie.—p. 496.

New Graphic System of Lung Signs.—In attempting to devise a new method for solving the problem of giving a graphic representation of râles, Somme has one sign for all except crepitation and subcrepitation. This sign is a short, slanting line. It is attached to a main line running vertically, slanting, horizontally, in a curved or straight line through the whole of the area over which the râles are heard. In this manner repetition of the sign is rendered superfluous. Overloading of the chart is avoided, and the impression it gives is much clearer. The time required to record these signs is also much reduced. The size of râles is indicated by the position of the short, slanting line on the main line; small râles are indicated by the râle sign being attached to the upper end of the main line, whereas when the râles are coarse the râle sign is attached to the bottom of the main line. Râles of intermediate size are indicated by the râle sign being attached to the center of the main line. In this manner fine, medium, and coarse râles can be indicated, and the principle is sufficiently elastic to permit of further differentiation in the size of râles. The number of the râles is indicated in three grades (more or fewer grades may be employed, if necessary) by adding to the number of the short slanting line on the main line. The degree of resonance is indicated by one to three short, slanting lines attached to the left side of the main line, whereas the râle signs are attached to its right side. The degree of moisture is indicated from one to three dots. The loudness of râles is indicated in all the desired number of grades by drawing the main line either as a whole or as a broken or dotted line.

Annales de l'Institut Pasteur, Paris

37: 627-709 (July) 1923

*Kidney Functions in Mosquitoes. E. Roubaud.—p. 627.
Research on Immunity in Horse Ascarida. S. Metalnikow.—p. 680.
*Contagion of Tuberculosis in Guinea-Pigs. P. Remlinger.—p. 686.

Kidney Functions in Mosquitoes.—The full title of Roubaud's article is "The Discords in Kidney Function in Mosquitoes, and Their Biologic Consequences." He presents arguments to demonstrate the importance of closer study of the habits, the biology and especially the excreting functions, and the conditions that are favorable to the destruction of the ova of the species of mosquitoes we are anxious to exterminate. His research has demonstrated a frequent lack of adaptation to conditions required for normal existence of the mosquitoes. The phenomena of hibernation are in this category. He suggests various means to profit by the biology of mosquitoes in prophylaxis of malaria.

Contact Contagion of Tuberculosis in Guinea-Pigs.—The remarkable feature of contagion of tuberculosis in guinea-pigs in laboratories and breeding places is that it is so rare. Although guinea-pigs are exceptionally susceptible, and in spite of the manifold opportunities for contagion in laboratories and breeding establishments, contact contagion is extremely rare. Remlinger's comment is that we are a long way yet from knowing all about tuberculosis.

Bulletin de l'Académie de Médecine, Paris

89: 467-497 (May 1) 1923

*Apparatus to Induce Artificial Respiration. G. Panis.—p. 469.
*Syphilitic Disease of the Lung. E. Sergent and H. Durand.—p. 478.
*Fibrous Pulmonary Tuberculosis in Old Syphilitics. E. Sergent and P. Cottenot.—p. 485.
*Pulmonary Tuberculosis in Ex-Soldiers. E. Rist.—p. 492.

Apparatus for Artificial Respiration.—Panis' apparatus applies artificial respiration according to the Schäfer method.

Syphilis of the Lung.—Sergent and Durand discuss the syphilitic changes found in the lungs at necropsy in two cases free from tuberculosis. Sergent and Cottenot insist that the discovery of fibrous pulmonary tuberculosis should always start an investigation for syphilis. As long ago as 1913, Sergent called attention to fibrous tuberculous lesions as a sign of syphilis, and he now states that syphilis was manifest in all but twenty-three of 100 cases of fibrous tuberculosis with tubercle bacilli in the sputum. Specific treatment, far from aggravating the tuberculosis, had a decidedly favorable action.

Tuberculous and Other Disabled Ex-Soldiers Before the Board of Review.—Rist testified in 48.4 per cent. of the 167 cases examined by the board of review, that the alleged disability was nonexistent or had been cured. In fourteen the tuberculosis was cured.

90: 35-68 (July 10) 1923

*Tracheobronchial Glandular Disease in Children. L. Bernard and Vitry.—p. 41. Conc'n, p. 69.
*Early Diagnosis of Uterine Cancer. A. Siredey.—p. 54.
Advertisement Denouncing Breast Feeding. P. Cazeneuve.—p. 60.
Actinomycosis of the Face. A. Sartory and G. Canuyt.—p. 65.

Tracheobronchial Glandular Disease in Children.—Bernard and Vitry protest against the prevalent assumption that glandular disease in school children is necessarily tuberculous. In 400 children repeatedly examined with serial tuberculin tests under roentgen-ray control, there was a group of 194 with unquestionable enlargement of the glands. The roentgen-ray and physical findings were approximately the same in all, but tuberculin tests were repeatedly negative in 64, although nearly all in this subgroup had been classed as tuberculous. In 15, the supposed adenopathy had vanished on reexamination soon afterward. In Marfan's experience, fully 50 per cent. of the children under 6 with enlarged tracheobronchial glands responded negatively to tuberculin tests. There are usually associated opaque patches in the lung, when the tuberculin test is positive. Nobécourt ascribes these nontuberculous tracheobronchial lesions to chronic infection of adenoids and tonsils. He found serial tuberculin tests constantly negative in 62 per cent. of the children with adenoid vegetations examined, and in 57 per cent. of the children with both adenoids and enlarged tracheobronchial glands. Even when tuberculin tests are positive, this does not prove that the adenopathy is necessarily tuberculous. Bernard and Vitry, in concluding the discussion, dwelt on the dire consequences liable when a child is mistakenly labeled tuberculous.

Early Diagnosis of Cancer.—Siredey expatiates on the harmlessness and vital importance of cutting out a fragment for examination when there is irregular bleeding from the uterus, no matter how slight. If the bleeding keeps up, negative findings should not be relied on. In eight cases described, the routine biopsy had revealed incipient malignant disease of the uterus. Too often the physician waits for more decided symptoms to explain the slight irregular bleeding, and thus the favorable stage for intervention slips past.

90: 69-95 (July 17) 1923

Neurovaccine. L. Camus.—p. 79.
Radiography Under Radioscopic Control. Lomon.—p. 89.
*Synthetic Culture Mediums for Tubercle Bacilli. G. Kuss.—p. 91.

Culture Mediums for Tubercle Bacillus.—Kuss commends two culture mediums, which he describes, as providing unusually favorable conditions for growth of tubercle bacilli. The bacilli take up nourishment from the acids of the medium, and the latter is planned to produce optimal acidity. They contain asparagin, phosphoric acid or sulphuric acid, glycerin and citric acid, and the tuberculins made with these mediums are said to be unusually potent.

Bulletins de la Société Médicale des Hôpitaux, Paris

47: 1051-1086 (July 6) 1923

Insulin in Treatment of Diabetes. M. Labbé.—p. 1051.
*Tuberculous Pericarditis. F. Masselot et al.—p. 1058.
Acute Leukemia in Tuberculosis. A. Plisavy et al.—p. 1066.
Phlebitis from Mumps in Adult. Pilod.—p. 1070.
Pathologic Anatomy of Chronic Gastritis. F. Ramond and C. Jacquelin.—p. 1073.
Septicemia from Staphylococcus Aureus. E. de Massary and J. Rachet.—p. 1079.
*Autohemotherapy in Local Skin Infections. P. Merklen and F. Hirschberg.—p. 1081.

Tuberculous Pericarditis.—The tuberculosis had spread from the mediastinal glands to the pericardium and right lung,

in the man aged 30. The only positive clinical sign of the tuberculous process with vegetations in the pericardium was the increase in the area of dulness over the heart. This enlargement of the heart, in the absence of hypertension and valvular disease, can be due only to pericarditis.

Autohemotherapy in Local Infections. — Merklen and Hirschberg report 8 cases of furunculosis and 6 of other local skin processes in which treatment was by injections daily or on alternate days of from 4 to 15 c.c. of the patient's own blood repeated two or three times. No effect was apparent in 3 of the 8 furuncle cases, but all the others showed marked improvement, and the rapidity with which this occurred was remarkable in some cases. The venous blood was reinjected into the buttock at once. If no benefit is apparent by the third injection, it seems useless to persist. Ravaut, Sicard and others regard the effect as a kind of vaccine therapy, especially effective in suppurating skin affections, but Nicolas and Gaté explain it as a kind of hemoclastic shock.

47: 1087-1126 (July 13) 1923

*Medicolegal Importance of Latent Syphilis. L. Desclaux.—p. 1088.
*Defective Ossification of Skull and Clavicles. A. Léri and Trétiakoff. —p. 1091.
*Acute Encephalitis with Ocular Paralysis. Léri and Trétiakoff.—p. 1098.
*Gastric Crisis in Tabes. D. Daniclopolu.—p. 1102.
*Cerebrospinal Meningitis. P. Brodin, R. Marquézy and M. Wolf.—p. 1107.
*Diagnosis of Pulsus Alternans. A. Clerc and G. Perrochaud.—p. 1111.
Multiple Xanthomas. B. Barker Beeson (Chicago).—p. 1116.
Hemorrhage in the Cerebellum. G. Guillain et al.—p. 1120.
Pulsation in Varicose Veins. C. Laubry and P. Merklen.—p. 1123.

Latent Syphilis and Workmen's Compensation.—The spontaneous fracture of the femur while carrying a 50 pound weight on the shoulder was explained by latent syphilis. In a second case, osteitis of the ribs had been ascribed to an industrial accident. It had healed, leaving mediastinitis. Desclaux proved that latent syphilis was responsible for the whole, and was probably antecedent to the accident.

Defective Ossification of Skull and Clavicles.—Léri analyzes the necropsy findings in a typical case of what Marie has described under the name of cleidocranial dysostosis. In 1921, Apert had compiled seventy cases; the case here illustrated is the fourth with the necropsy findings. They showed evidences of an intra-uterine inflammatory process in brain and meninges.

Acute Encephalitis.—The woman, aged 52, suddenly developed absolute apathy, refusing food, but without fever, paralysis or other sign of nervous derangement. After four days of this, high fever, coma and paralysis of the ocular muscles followed, with death the same evening. Necropsy disclosed subtotal softening of the corpus callosum with numerous small foci of encephalitis.

Gastrogram in Tabetic Crises.—The graphic record of the motor function of the stomach and the absence of the oculocardiac reflex during the gastric crisis of tabes seem to throw some light on the mechanism of the latter.

Meningitis Simulating Malaria.—The young woman with cerebrospinal meningitis had apparently recovered under serotherapy by the ninth day. She had been given a polyvalent antiserum, 10 c.c. by the vein, 230 c.c. intramuscularly, and 240 c.c. intraspinally. Intense pruritus and other symptoms of serum sickness developed during the following week, and then came a period of what seemed to be malarial chills and fever on alternate days. During the fever there was a return of some of the meningitic symptoms, but during the intervals she felt well. The blood and spinal fluid seemed to be sterile until the end of the fourth week, when meningococci were found in the spinal fluid. An attempt was then made to induce a "serum shock"; 1 c.c. of the antiserum was injected intravenously, diluted 1:10 in 0.9 per cent. sodium chlorid solution, at 11:30 a. m. Fifteen minutes later, 5 c.c. was injected. One hour later a severe shock developed, the teeth chattering in the chill, the temperature running up to 104 F., the pulse 120. By the next day all the symptoms had disappeared, and convalescence was soon complete. In the discussion that followed, Netter reported two cases in which a severe anaphylactic shock followed intravenous injection of the antiserum, and it proved impossible to revive one of the patients. Since then he has abandoned the intravenous route. Sergent reported a case of the intermittent malarial type which had long resisted subcutaneous and intravenous serotherapy, but subsided at once after vaccine therapy by the vein, which induced a violent shock.

Diagnosis of Pulsus Alternans.—Clerc and Perrochaud show by a typical case the importance of electrocardiography for the differential diagnosis of pulsus alternans.

Gynécologie et Obstétrique, Paris

8: 1-99 (July) 1923

*Puerperal Fever: History. A. Couvelaire.—p. 1.
*Present Conception of Puerperal Fever. M. Brouha.—p. 11.
*Prophylaxis of Puerperal Fever. E. Hauch.—p. 36.
*Means to Combat Puerperal Fever. E. Alfieri.—p. 63.

History of Puerperal Fever.—This was the opening address at the Puerperal Fever Congress at Strasbourg in August. Couvelaire concludes his historical sketch with the statement that neither serotherapy nor vaccine therapy has proved successful in treatment often enough to be convincing. The method of shock treatment, introduced by Widal, Abrami and Brissaud in 1913, injecting some heterogenous protein intravenously, is still in the tentative stage.

Present Conception of Puerperal Fever.—Brouha remarks in the course of this study of the etiology, pathologic anatomy and prophylaxis of puerperal fever, that coitus during the last two months of gestation is dangerous. The streptococcus was cultivated from under the prepuce in more than 50 per cent. of the men examined. The pregnant should be warned against touching the genital organs with the hand. Hot soapy water, applied with sterilized cloths freely to the vulva every day, helps to reduce the bacterial flora. It seems to be the general opinion that prophylactic vaginal douches are useless, and may do more harm than good in a normal vagina.

The Diagnosis and Prognosis of Puerperal Fever.—Hauch recalls that almost any pathogenic micro-organism may be responsible for puerperal fever, but hemolytic streptococci can be incriminated in 80 per cent. Virulent streptococci are sometimes found in the vagina of women before and after delivery, normal in every way. These women seem to have been vaccinated by their own bacteria, and suffer no harm from them, but, transferred to another parturient, they may entail a catastrophe. In his service, the parturients are all isolated, and the room is disinfected after the woman is transferred to the ward for the puerperium. Preventive serotherapy and vaccine therapy have not given conclusive results yet, but they have been good enough to encourage further research in this line. These experiments have all been made with streptococci, but we cannot be sure beforehand what bacteria will be responsible for the puerperal fever if it develops. The logical way would be to prepare an autogenous vaccine from each micro-organism found in the vagina of the pregnant woman, but this of course is impracticable.

Treatment of Puerperal Infection.—Alfieri's review of the various measures that have been applied in treatment of puerperal infection, confirms the importance of an early diagnosis and the folly of trusting to expectant or merely symptomatic treatment. He is inclined to agree with Mangiagalli that the morbidity and mortality are determined by the way in which the virulence varies from case to case and from epidemic to epidemic, regardless of whatever treatment may be applied.

Journal de Chirurgie, Paris

22: 1-112 (July) 1923

*Chronic Woody Thyroiditis. G. and R. Monod.—p. 1.

Chronic Ligneous Thyroiditis.—G. and R. Monod conclude from analysis of fifteen published cases and three personally observed (with necropsy in one), that chronic woody thyroiditis may subside spontaneously or only after total or partial thyroidectomy, or under treatment for syphilis. In three of the published cases, death occurred suddenly from suffocation. They ascribe the affection to syphilitic sclerosis, involving the trachea as well as the thyroid. The danger is from the trachea, and tracheotomy is required at the slightest menace of suffocation. The cicatricial stenosis that may follow the lesions in the trachea must also be heeded. One of their

three patients was a woman, aged 38, and the diagnosis had been cancer of the thyroid. There was no pain or fever, and roentgen treatment was planned, but the microscope showed merely chronic inflammation in an excised scrap, and the positive Wassermann reaction gave the clue. Under arsenical treatment the whole subsided in two months, and there has been no recurrence during the nearly three years since. In the third case, the syphilitic stenosis of the trachea was accompanied by cellulitis in neck and mediastinum.

Lyon Chirurgical

20: 293-420 (June) 1923

Ectasia and Stenosis of Lacrimal Passages. Rollet and L. Bussy.—p. 293.
*The Pfannenstiel Incision in Gynecology. M. Patel and M. Vergnory. —p. 299.
*Trophic Disturbance After Severing the Sciatic. J. Hertz.—p. 328.
*Trophic Ulceration of Stump. P. Oudard and G. Jean.—p. 336.

The Pfannenstiel Incision in Gynecology.—Patel and Vergnory conclude from their study of various incisions in gynecologic surgery that the Pfannenstiel is destined to be used more and more, as it wards off eventration.

Trophic Lesions After Severing of the Sciatic Nerve.—Hertz reports the healing in forty-eight hours after periarterial sympathectomy of ulcers on the foot that had resisted all other measures for years. The left sciatic nerve had been severed by a bullet, and almost total paralysis followed, with talipes equinus, pains and perforating ulcers in the foot. The foot was straightened by tenotomy, and the nerve was released from its cicatricial bed and wrapped in an animal membrane; periarterial sympathectomy nineteen days later completed the cure. Reexamined eight months later, the gait is nearly normal, the leg regaining its strength more and more, the skin in perfect condition. Only slight pains remain.

Trophic Lesions in Stump.—The trophic ulceration in the edematous stump had dried by the next day after periarterial sympathectomy, and by the tenth day had almost completely healed. By the fifteenth day no trace of it was left, and the stump is now soft and supple. The trophic disturbances had been of nearly five months' standing.

Revue Médicale de la Suisse Romande, Geneva

43: 417-480 (July) 1923

*Ether-Oil by the Rectum for Anesthesia. M. Gueissaz-de Dardel.—p. 417.
Cancer in Switzerland. A. Renaud.—p. 433.
Traumatic Neuroses in the Insured. Julliard.—p. 469. Idem. Piccard. —p. 475.

Anesthetization of Children with Ether-Oil by the Rectum.—The advantages of this method for operations on the face are extolled, especially for children. Twenty-seven cases are reported in detail. The anesthesia was perfect in 14, and perfect in 4 so far as the operation was concerned. It failed completely in 3, and partially in 6; in these the amount of ether used was less than 2 gm. per kg. of body weight.

Pediatria, Naples

31: 801-856 (Aug. 1) 1923

*Etiology of Measles. G. Caronia.—p. 801.
*Experiences with Kala-Azar. W. L. Yakimoff.—p. 811.
*Disease of the Pineal Gland. A. Laurinsich.—p. 817.
*Subperiorbital Abscess. V. F. Madon.—p. 834.

The Micro-Organism Causing Measles.—Caronia announces that the micro-organism responsible for measles passes through an ultramicroscopic phase in the cycle of its development, but otherwise appears as a small diplococcus on special anaerobic culture mediums. He obtained cultures of it from the blood, the bone marrow, cerebrospinal fluid and nasopharyngeal secretions of children in the prodromal and eruptive phases of measles. The blood serum of measles patients, especially in the eruptive stage and in convalescence, is rich in specific agglutinins, amboceptor and opsonins for the micro-organism obtained in the cultures. Young rabbits inoculated by the vein with large amounts of blood from measles patients developed a clinical picture resembling human measles. The same micro-organism that was cultivated from the measles patients could be cultivated from the blood serum of the animals, and their serum developed specific antibodies for the micro-organism isolated from the human cases. Inoculation of healthy children with inactivated or attenuated cultures of this micro-organism conferred immunity to measles on the children, and none thus treated has contracted measles under the most rigid tests. Their blood responds to serologic tests for this diplococcus. On the other hand, inoculation of three healthy children, aged 2 and 3, with large and repeated doses of recent cultures of the micro-organism (intramuscularly) induced a typical but attenuated form of measles. His research has thus confirmed and amplified the work of Nevin and Bittman. The incubation period was twelve or thirteen days, and the prodromal period was unusually protracted. The eruption was brief but intense and universal, accompanied by high fever, but both rapidly disappeared. There were no complications, no sequelae. The serologic reactions were positive, and the micro-organism could be constantly cultivated from the blood and the filtrates of the secretions from the nose and throat. The only culture mediums on which the diplococcus developed were of the catalyzing Di Cristina or the Tarozzi-Noguchi types. It is easy to trace the development of the diplococcus into, through and beyond the ultravisible phase of its cycle of development.

Kala-Azar.—Yakimoff was able to cultivate the Leishman bodies from the blood of 7 of 19 children with kala-azar in Turkestan, and from 3 of 4 adults; that is, in 43.4 per cent. of the total 23 cases. In 31 cases of supposed malaria he corrected the diagnosis to kala-azar, and in two children, aged 2 and 2½ years, he found both the Leishman bodies and the malaria plasmodium in the blood.

Disease of the Pineal Gland.—Laurinsich compares a case personally observed with those on record, having compiled a total of fifty-six cases in males and twenty-two in females. The ages ranged from 6 days to 75 years. The majority of the patients had not reached puberty. His patient was a girl, aged 7, who for two years had had occasional attacks of sudden fever, vomiting, intense headache in vertex and occiput, and transient paralysis of the legs. The secondary sexual characters were like those of an adult woman, although the child was short for her age. The Wassermann reaction was positive in the child and in both parents. The sella turcica was normal. Attempts at treatment with pineal gland extract were begun but not continued, as the child was taken away by its parents.

Subperiorbital Abscess.—Madon successfully evacuated the abscess in the girl, aged 10. It was evidently secondary to an inflammatory process in the ethmoidal sinus from acute rhinitis. The pulse was only 64, and dropped to 60 after the operation, but was 80 by the end of the week.

Archivos Latino-Amer. de Pediatría, Buenos Aires

17: 401-480 (June) 1923

Arsphenamin Treatment of Congenital Syphilis. H. Davidsohn.—p. 401.
*Facial Paralysis in Acute Poliomyelitis. Victor Escardó y Anaya.—p. 414.
Case of Congenital Megacolon. S. E. Burghi and A. Volpe.—p. 425.
*Classification of Gastro-Intestinal Derangement in Infants. C. Ferreira.—p. 432.
Internal Hydrocephalus Simulating Brain Tumor. J. Obarrio.—p. 446.
Lumbar-Sacral Funiculitis in Child After Typhoid. J. M. Estapé.—p. 462.
Sclerosis of the Face After Typhoid. A. A. Ugón.—p. 465.

Facial Paralysis in Acute Poliomyelitis.—Escardó recalls that Uruguay has suffered more from acute poliomyelitis than any other country in South America. There have been five epidemics of about 100 cases each, since 1906. During the latest epidemic, facial paralysis was so common that he has had 54 children with facial paralysis under treatment already in 1923, while the cases of facial paralysis in the preceding ten years totaled only 54. In 10 cases this year the facial paralysis was the only symptom; in 2 it was associated with other signs of poliomyelitis, and in one case an infant presented facial paralysis with meningeal symptoms before the paralysis of the legs developed. He thinks we must accept a form of acute poliomyelitis with paralysis restricted to the face. The facial paralysis in all the cases this year has persisted longer than usual, and proved exceptionally resistant to treatment. In one case described, there was paralysis of the neck as well as of the right face, legs and left arm. The

case confirms Figueira's contention that the cephaloplegia to which he has called attention is a form of acute poliomyelitis.

Classification of Gastro-Intestinal Derangement in Infants.—Ferreira describes and compares the doctrines of Czerny, Langstein and Finkelstein with those of pediatrists in America and other countries. His quotations show that the German doctrines are not accepted by many of the leading pediatrists of the world, while others adopt them only in part.

Deutsches Archiv für klinische Medizin, Leipzig

142: 241-378 (June) 1923

*The Reaction of the Blood in Disease. H. Strauss et al.—p. 241.
*The Osmotic Resistance of Erythrocytes. H. Simmel.—p. 252.
Gaseous Interchanges in the Obese. II. R. Plant.—p. 266.
Histopathology of Infectious Chorea. Slauck.—p. 279.
*Pathogenesis of Severe Anemia. M. Mandelstamm.—p. 287.
*Paralysis of Intestinal Capillaries. F. Limper.—p. 296.
Ferment Content of Duodenal Juice. L. Bogendörfer and G. Kühl.—p. 301.
Bacteria Content of Small Intestine. Bogendörfer and Buchholz.—p. 318.
*Bilirubin in the Urine. K. Hoesch.—p. 330.
Resistance Tests of Human Muscle. E. Jacobi.—p. 349.

The Actual Reaction of the Blood in Diabetes, Heart and Kidney Diseases.—This article from Volhard's service states that the normal p_H of the blood is between 7.29 and 7.37, averaging 7.33. But this gives no information as to the actual reaction of the tissues, and all our methods of examination show merely the reaction of the tissue fluids. The findings in thirteen typical cases of heart or kidney disease and normal controls are compared.

Osmotic Resistance of the Erythrocytes.—Simmel ascribes much of the confusion in regard to this subject to the errors inherent in the best technic to date. He presents a new method which obviates these errors, and describes the findings with it in various pathologic conditions. The test solution is made with 8.2 gm. sodium chlorid; 0.2 gm. each of potassium chlorid and magnesium chlorid; 0.2 gm. calcium chlorid; 0.1 gm. NaH_2PO_4 and 0.05 gm. $NaHCO_3$ in the liter. This fluid has a freezing point of -0.56 or -0.57, corresponding to normal blood serum, and this is the unit 1. The fluid is diluted in six pipets to 0.7; 0.6; 0.5; 0.4; 0.3, and 0.2. Blood is added to each and well shaken, and the pipets are set aside for an hour or two at most, at room temperature. Then the erythrocytes in each pipet are counted in the counting chamber. Comparison of the findings in the six pipets gives what he calls the resistance picture. It conforms to the findings with other reliable tests.

Pathogenesis of Severe Anemia.—Mandelstamm reports a case of fatal chronic anemia with atypical blood findings and polyps in the intestines. In connection with this case, he discusses the differential diagnosis and the pathogenesis of severe anemias.

Capillary Paralysis of the Intestines.—Limper has examined the intestines in ten cases presenting the clinical picture of capillary paralysis (Göppert). After six to fourteen days of influenza, a sudden aggravation developed, with pallor, cyanosis around the mouth, imperceptible pulse, distention of the abdomen, and death in a few hours. Necropsy in this anaphylactic pseudo-enteritis showed, macroscopically, inflammation in the bowel, but the microscope refuted this, revealing the extreme dilatation of the capillaries, crowded with erythrocytes, the arteries and veins only moderately filled.

Bilirubin in the Urine.—Hoesch analyzes the chemical behavior and estimation of bilirubin in the urine, its amount and significance.

Deutsche medizinische Wochenschrift, Berlin

49: 741-774 (June 8) 1923

*Psychoses of Pellagra Type. K. Bonhoeffer.—p. 741.
Metro-Endometritis and Metropathy. H. Sellheim.—p. 748. Conc'n.
Disinfection of Field of Operation. T. v. Miltner and H. Schlee.—p. 750.
*Dwarf Growth. C. Mau.—p. 751.
*Early Diagnosis of Congenital Syphilis. E. Hofmann.—p. 753.
Relations Between Skin and Immunity. Müller.—p. 754. Reply. Klemperer.—p. 755.
*Vasomotor Angina Pectoris. V. Savic.—p. 756.
*Decapsulation of Kidney in Eclampsia. A. Niedermeyer.—p. 756.
Roentgen-Ray Diagnosis of Chronic Appendicitis. S. Weinstein.—p. 757.
Principles of Version and Extraction. M. Henkel.—p. 758.
Lymphocyte Reaction in Prognosis of Tuberculosis. Katona.—p. 760.
Fracture Simulating Luxation of the Femur. R. Voigt.—p. 761.
Tonsil Partly Enucleated by Trauma; Spontaneous Healing. F. Rohr.—p. 761.

Psychoses of Pellagra Type at Berlin.—Bonhoeffer reports ten cases since 1919, all in women, extremely undernourished, with necropsy findings in all but three who are still under treatment. In four of the cases the psychosis developed after a three months' stay in the hospital, the patients refusing to eat. Several were debilitated by excessive menstrual hemorrhages. Cystic colitis was the predominant finding in the bowel, and some patients presented this and all the other symptoms of pellagra except the skin changes. It is possible that the skin changes might have been brought out by irradiation. None of the patients had eaten corn-meal.

Dwarf Growth.—In one of the two cases of extreme nanism described, congenital syphilis of the pituitary seems to have been the main factor. In the other case, removal of a congenital goiter causing suffocation, at the age of 3 weeks, was evidently responsible for the nanism and backward mental development. Under thyroid treatment and thyroid grafting, considerable improvement was evident. It might have been better to have shifted the thyroid to some other location, without removing it. The operator supposed he had resected only half of the thyroid, but he must have removed nearly the whole of it.

Early Diagnosis of Syphilis.—Hofmann regards a positive Wassermann reaction in the retroplacental blood as the most reliable means at our disposal for detection of syphilis in dubious cases. In a number of cases, this gave the first clue to existing syphilis which had escaped all previous diagnostic measures. Systematic routine examination of the retroplacental blood would give an oversight of the prevalence of syphilis in a community.

Vasomotor Angina Pectoris.—The pain does not spread to the arm, and there is no special apprehension of death with this vasomotor angina pectoris. There are usually other signs of vasomotor instability. In a case described, in a woman, aged 22, the attacks have always yielded to calcium chlorid and a sedative. The acro-asphyxia accompanying the attack first gave the clue to its nature.

Decapsulation of Kidney in Eclampsia.—Niedermeyer here reports a second case in which decapsulation of one kidney unquestionably saved the young woman's life after the coma from the eclampsia had lasted several hours, with total anuria. The convulsions had kept up after evacuation of the uterus (seventh month), but ceased at once after the operation, and the coma passed into a quiet slumber.

49: 775-806 (June 15) 1923

No Claim for Workmen's Compensation in a Case of Fatal Lymphogranulomatosis. H. Dürck.—p. 775. Conc'n, p. 808.
*Estimation of Hardness of Muscles. E. Mangold.—p. 777.
Clinical Import of Gas Interchanges in the Tissues. Lipschitz.—p. 778.
*Chronic Constipation in Women. Asch.—p. 781.
*Epidemic of Extragenital Syphilis. O. Grotz.—p. 782.
*Speed of Sedimentation in Internal Disease. K. Kovács.—p. 785.
*Phlorizin Test of Liver Function. B. Mendel.—p. 787.
Itching as Initial Symptom of Allergic Shock. D. Klinkert.—p. 787.
The Reaction to Quartz Lamp Treatment in Pulmonary Tuberculosis. H. Gödde.—p. 788.
Tuberculin Treatment of Asthma. M. Arjeff.—p. 791.
*Another Instance of Drug Amblyopia. G. Abelsdorff.—p. 792.
*Boas' Treatment of Hemorrhoids Without the Knife. A. Alexander.—p. 792.
Training the Public in Hygiene. E. Liefmann.—p. 793.

Estimation of Hardness of Muscles.—Mangold comments on the instructive findings with the sclerometer described. It is proving useful in estimating cadaveric rigidity, in physiologic research on athletes, and in determining the tension in the eye, but above all as an aid in differential diagnosis of tumors, edema, and contraction of organs, and to supervise the course under treatment.

Chronic Constipation in Women.—Asch explains that there is so much space in the female pelvis, in comparison, that the accumulation of feces does not cause as much discomfort as in men, and the impulse to defecation is liable to pass unheeded in women. In his suggestions for hygiene of bowel functioning, he warns that the one mass of feces induces the impulse to defecation only once, as a rule. After this, it is

merely in the way of the next batch of stool. Bathing and swimming are useful in combating constipation, as the air in the bowel seeks to rise to the surface of the horizontal body. It thus exerts a kind of internal massage on the loops of the intestines, especially when aided by self-massage in the water.

Epidemic of Extragenital Syphilis.—Grütz relates that a thrashing machine making its rounds in a farming district in Holstein had a crew of twenty-four men. They were married and lived in different villages, assembling for work and dinner daily. One developed a severe throat affection and within a short time fifteen others of the crew developed the same. The tonsils alone were affected at first, and the malady proved to be extragenital syphilis in all but the first man. He was known to be living with a venereally diseased woman in a remote village. The circumstances demonstrated that this was the source for the epidemic. Grütz comments on the fact that the intact mucosa had escaped the invasion of the spirochete; it settled only on the tonsils, and several of the men escaped entirely.

Speed of Sedimentation of Erythrocytes in Internal Diseases.—Kovacs applied Westergren's technic (described in these columns, Oct. 22, 1921, p. 1379) to 450 patients with various internal diseases. The amount of sedimentation in one hour gives us another aid in differential diagnosis. In certain internal diseases, the blood is found to contain substances which promote sedimentation, while in others, sedimentation is checked. Acceleration of sedimentation is an unfavorable sign in tuberculosis, as it points to an active process. In 14 cases of gastric cancer, acceleration was always pronounced. With liver disease and gallstones, sedimentation was generally abnormally retarded, but it proceeded normally in 67 cases of simple gastro-intestinal ulcer free from complications, as also in 24 of cardiovascular and 18 of kidney disease, and in 9 cases of exophthalmic goiter or other endocrine derangement. As the speed of sedimentation is never increased in normal conditions outside of pregnancy, acceleration should always warn of the presence of some morbid process.

Phlorizin Liver Test.—Mendel states that intravenous injection of 5 mg. of phlorizin is followed in a few minutes by intense glycosuria. This lasts for from forty to sixty minutes, as a rule, in the healthy, fasting subject. With a diseased liver, the glycosuria keeps high much longer, sometimes for two hours. The glycosuria was lengthened proportionately also in dogs after injury of the liver. The fasting subject is given 0.5 liter of water to drink at once after the injection of the phlorizin, and again at the beginning of the second hour. This usually renders the catheter unnecessary. Until the urine responds positively to the Nylander test, it is examined every three minutes for the first half hour and then every five minutes. Tests on twenty patients with liver disease and twenty healthy controls confirmed the value of a normal response as a sign that the functional capacity of the liver is not substandard.

Ethyl Hydrocuprein Amblyopia.—The woman, aged 26, was given three doses of 0.25 gm. ethyl hydrocuprein (optochin) in treatment of pneumonia in 1914. Total blindness followed, but vision gradually improved to 6/20 and 6/35, which is the present condition. The pupils still react naturally, but the disks are blanched; the retinal vessels are narrow, and there are white patches in the retina. Sclerosis of the vessels is manifest in these depigmented areas. Abelsdorff has compiled fifty-five cases of visual disturbance from ethyl hydrocuprein, and several presented this combination of injury of the optic nerve, retina and choroid which is peculiar to ethyl hydrocuprein.

Treatment of Hemorrhoids Without the Knife.—Alexander declares that Boas' bloodless method of treating hemorrhoids is the most promising of all nonsurgical measures, and that the future belongs to the nonoperative methods. Boas' method was described in these pages, Feb. 14, 1920, p. 497, and May 29, 1920, p. 1548. Alexander says that twenty-two of twenty-four patients treated in this way were cured at once and permanently at a single sitting. The two others required another sitting. The cure was complete in five or six days in some; others required from sixteen to eighteen days.

Münchener medizinische Wochenschrift, Munich

70: 725-760 (June 8) 1923

*Treatment of Lymphogranulomatosis. H. Chaoul and K. Lange.—p. 725.
*Immunization Against Puerperal Infection. G. Maroudis.—p. 727.
Problems in General Paralysis. K. Pönitz.—p. 729.
*Dyes as Antiseptics. E. Baumann.—p. 731. Conc'n, p. 775.
*Severing Adhesions in the Pleura. R. Korbach.—p. 734.
Toxins and Accessory Toxins in Antivenins. R. Kraus and R. Botelho.—p. 736.
Rupture in Tubal Pregnancy. G. B. Gruber and E. Kratzeisen.—p. 736.
*Protein Therapy in Ankylosis of the Spine. K. Graf.—p. 737.
*Rachitic Curvature of the Spine. F. H. Watermann.—p. 739.
The Flatfoot Question. E. Fischer.—p. 740.
*Blood Pressure from Psychologic Standpoint. O. Clauss.—p. 741.
*Tearing Out of Tendons. B. Günther.—p. 742.
Ambulatory Pneumothorax Treatment. Apel.—p. 742.
Treatment of Neuralgias. H. Curschmann.—p. 743.
Organization of Public Health System. G. Seiffert.—p. 744. Conc'n.

Roentgen-Ray Treatment of Lymphogranulomatosis.—Chaoul and Lange report full restoration of earning capacity and survival for from eight months to three years in eight of their twelve cases of severe lymphogranulomatosis. The others died from gastric cancer, sarcomatous degeneration of glands in the neck, or other intercurrent disease. There was a slight recurrence in one of the eight, but it yielded promptly to renewed irradiation. This success was realized with small doses and large fields, each field receiving a total of only 60 or 80 per cent. of the skin erythema dose, given in the course of six or eight weeks. The course was repeated three months later, and again in the following year. A complete cure was never realized.

Louros' Prophylactic Immunization Against Puerperal Infection.—THE JOURNAL described (June 23, 1923, p. 1885) Louros' success with active and passive immunization of pregnant women and parturients by means of an antistreptococcus vaccine. Maroudis relates that this method has now been applied to 71 women before gynecologic operations, 367 pregnant women, 862 parturients, and 24 at the time of a gynecologic operation. The total morbidity in 1,229 women thus immunized was 3.25 per cent. while it was 8.38 per cent. in a group of 786 not injected with the vaccine. The mortality was respectively 0.16 and 1 per cent. in the two groups. The results were the more gratifying as the Athens hospital is an old building, with 150 beds, and twice this number of refugees were taken in at one time.

Antisepsis with Dyes.—Baumann's charts condense the experiences of eight years' comparative study of various disinfectants in the statement that methyl violet is decidedly more potent than any other dye used for disinfection purposes.

Endothoracal Severing of Pleural Adhesions.—Korbsch describes the Jacobæus method of endothoracal pneumolysis as he applied it, in three typical cases out of his larger experience. It is not adapted for broad adhesion of surfaces, but otherwise he regards it as essential progress for both diagnosis and treatment.

Protein Therapy in Vertebral Ankylosis.—Graf reports two cases in which some improvement followed parenteral injection of a protein, supplemented by systematic exercises, especially swimming.

Treatment of Rachitic Curvature of the Spine in Young Children.—Watermann has found that placing the young child prone often exerts a favorable influence on curvature of the spine in rickets. This may obviate the necessity for a plaster bed. To keep the child in the proper position to combat the scoliosis, he fastens the child's toys to the side of the bed corresponding to the curve of the scoliosis. Two children with opposite scoliosis can have the sides of their beds placed together to influence the curvature as they turn to visit with each other.

Blood Pressure Measurements as an Emotional Trauma.—Clauss argues that it is often unwise to fasten the patient's attention on his blood pressure. It is not justified objectively, while the psychic trauma may be disastrous.

Traumatic Tearing Out of Tendons.—A man was getting on a train, just starting, when the door slammed and caught his left forefinger while he was thrown off the train by the jerk. The finger thus amputated had hanging from it two tendons, 22 and 27 cm. long.

70: 761-794 (June 15) 1923
*Alleged Stimulating Action of Roentgen Rays. G. Holzknecht.—p. 761.
Cause of Negative Wassermann Reaction in Rabbit Cerebrospinal Fluid. F. Plaut and P. Mulzer.—p. 762.
*Epidemic of Poliomyelitis. L. Schall.—p. 763.
Sources of Errors in Sedimentation Tests. O. Gragert.—p. 765.
Gastric Digestion in Young Infants. S. Rosenbaum.—p. 767.
*Acute Perforation of the Stomach. W. Horn.—p. 771.
*Prophylaxis of Lye Accidents. V. Zimanyi.—p. 772.
*Giant Growth of Child. A. Fein.—p. 772.
Clamp for Compression of Aorta. G. Haselhorst.—p. 773.
Improved Lamp for Microscopy. P. Rosenberg.—p. 774.
Unreliability of Testimony of Eye Witnesses in Medical Matters. Engelhorn.—p. 774.
*Influence of Chilling on Spirochetes. A. Kissmeyer.—p. 775.
Differential Diagnosis of Acute Appendicitis. A. Krecke.—p. 778.
Advice Stations for Venereal Disease. H. Loeb.—p. 781.

Alleged Stimulating Action of Roentgen Rays.—The Germans for years have been quoting what they call the Arndt-Schulz law, which states that small doses of anything have a stimulating action, moderate doses paralyze, and large doses kill. Holzknecht refuses to accept this law, at least as applying to the roentgen rays, declaring that they never have a stimulating action, no matter how small the dose. Their action is always destructive.

Epidemic of Acute Poliomyelitis in Tübingen in 1922.—Schall states that 70 of the 139 cases he has been studying were in children under 4. In 83 of the 90 cases in which the particulars of the onset were known, there had been fever. Symptoms of meningitis were evident in 13 at the onset; paralysis developed in 107, and 14 cases terminated fatally. The epidemic began in a school of younger children, with an epidemic of a catarrhal affection of the upper air passages, so severe that the school was closed. The teacher developed an acute pulmonary process in addition, and died, after a period of paralysis which first suggested the true nature of the epidemic. This catarrhal, influenza-like onset predominated throughout the epidemic, so that the differential diagnosis was impossible until the paralysis developed. In one institution, 14 infants presented symptoms suggesting influenza, one after the other, in the course of a month, and 3 of these infants developed persistent poliomyelitic paralysis. The data presented confirm the assumption that abortive cases of poliomyelitis prevail in every epidemic, and that the cases with paralysis are only those with an exceptionally severe course. That even the abortive cases confer immunity, seems to be demonstrated by certain experiences that have been reported, but it is unquestionably true that certain cases of supposedly mild influenza may be in reality acute poliomyelitis, capable of transmitting the disease to others. The physician can convince the public of this fact more readily than he can convert them to acceptance of the vague and mysterious conception of "healthy virus carriers." In the majority of Schall's cases, the interval between the febrile onset and the paralysis was from three to six days, but in 2 infants the intervals were sixteen and twenty-three days, the paralysis coming then like a bolt from a clear sky.

Acute Perforation of the Stomach.—Horn estimates that perforation occurs in about 8 per cent. of all gastric ulcers, while it is rare with gastric cancer. In a case described, the minute perforation was in the center of a small, supposedly simple, circumscribed hard ulcer, and the perforation was merely sutured, with gastro-enterostomy. The course of the case soon demonstrated that the lesion had been malignant.

Accidents from Lye.—Zimanyi states that in the last three years 10 per cent. of the patients in the nose and throat department of the Budapest hospitals have been cases of stenosis of the esophagus from corrosion by lye. A similar unprecedented prevalence has been reported from Berlin, families economizing by making their own soap. The accidents generally occur from the lye being mistaken for drinking water, and he urges that this could be prevented by compulsory addition of some disagreeable volatile oil. This would not interfere with the legitimate use of the lye.

Giant Growth of Child.—Fein ascribes the anomaly in the boy, aged 8, to some lesion in the pineal gland, but is unable to prove this. The child is 145 cm. tall, and weighs 43 kg. The sex glands and secondary characters are nearly those of an adult, the voice deep. The sella turcica is normal; the pineal body is not visible in the roentgenogram.

Resistance of Spirochaeta Pallida to Cold.—Kissmeyer was able to make cultures from a strain of *Spirochaeta pallida* that had been kept three months at minus 16 C. (3.2 F.).

Zentralblatt für Chirurgie, Leipzig

50: 1017-1048 (June 30) 1923
*Treatment of Pyogenic Processes of the Face. A. Läwen.—p. 1018.
*Progressive Furuncle of the Face. W. Rieder.—p. 1024.
*Chronic Gastritis and Gastric Ulcer. G. E. Konjetzny.—p. 1026.
Danger of Catgut Infection. K. Propping.—p. 1028.
Roll Knee Joint versus Schede-Habermann Knee Joint. C. ten Horn.—p. 1030. Comment. F. Sauerbruch.—p. 1031.

Treatment of Progressive, Pyogenic Processes of the Face.—During the past three years, Läwen has had three fatal cases of furuncle of the upper lip and one fatal case from carbuncle of the neck. In all these cases, repeated extensive incisions had been made. In one case of furuncle of the upper lip, in which the progress was downward, he had ligated the jugular vein. Malignant furuncle of the upper lip is characterized by high fever, chills, vomiting and a rapidly fatal course. Läwen has been experimenting of late with local injections of the patient's own blood. The lip was taken between the fingers and through the margin the soft parts were infiltrated with blood. Usually from 30 to 40 c.c. was sufficient. He injected mainly into the healthy tissue surrounding the inflammatory area. So far he has not been able to try the method in a severe malignant case, but in mild cases the injection of the patient's own blood has seemed to aid in effecting a rapid cure.

Progressive Furuncle of the Face.—Rieder used to inject from 1 to 2 c.c. of the patient's own blood into the center of the furuncle. Of late he has used, in place of blood, ordinary horse serum. The furuncle is opened wide by a crucial incision keeping inside the infected tissue so as not to extend the infection through the circulation. To this whole infiltrated area he applies tampons dipped in diphtheria antitoxin or horse serum. The result is surprising; the process is arrested and the slough is extruded usually after twenty-four hours. Fresh granulations appear in two or three days, and the margins of the skin are drawn together with adhesive tape. For smaller furuncles, a subcutaneous injection of 1 c.c. of horse serum into the center of the furuncle, without incision, is sufficient.

Chronic Gastritis and Gastric Ulcer.—Konjetzny says that it has long been known that gastritis of distant regions of the gastric mucosa may be associated with gastric ulcer, but little attention has been paid to the fact. Kalima (Helsingfors) has subjected a large series of preparations from resected stomachs to a thorough anatomic analysis. In 100 per cent. of the cases there was more or less gastritis present—diffuse or in foci. Konjetzny has always found chronic gastritis in stomachs resected for chronic duodenal ulcer, and in a large number of recent ulcers.

Casopis lekaruv ceskych, Prague

62: 333-360 (March 31) 1923
*Spontaneous Inversion of Uterus After Delivery. J. Janota.—p. 333.
*Zonular Keratitis in Seeing Eyes. J. Janku.—p. 334. Conc'n.
Relation of Silicic Acid to Pulmonary Tuberculosis. J. Skokan and O. Stancl.—p. 340. Conc'n, p. 398.
Kielland's Forceps. J. Jeric.—p. 346.

Spontaneous Inversion of Uterus After Delivery.—Janota describes a case of inversion of the uterus immediately following spontaneous expulsion of the placenta, ten minutes after delivery of the baby. No manipulation (Credé, or traction on the cord) had preceded. Part of the cervix was not inverted. Reposition in ether anesthesia was followed by complete recovery without fever.

Zonular Keratitis in Seeing Eyes.—Janku reviews the literature, and publishes five cases of primary and four cases of secondary zonular keratitis in seeing eyes. He publishes nineteen microphotographs of the sections he made in these patients, and one case of gerontoxon.

62: 389-416 (April 14) 1923
*Significance of Assimilatory Conditions for Variability of Dimensions of Body. J. Krizenecky and V. Cetl.—p. 389.
*Pneumococci in Morbilli. A. Doskocil.—p. 396.

Significance of Assimilatory Conditions for Variability of Dimensions of Body.—Krizenecky and Cetl conclude from

their experiments on tadpoles, that the intensity of assimilation processes is a very important factor in the variability of growth. The variability is optimal only in a certain degree of intensity of these processes. Increased and decreased assimilation inhibits variability. They point out, however, that this applies only to quantitative differences of assimilation. Qualitative changes may have a specific action.

Pneumococci in Measles.—Doskocil cultivated pneumococci from blood in all of his cases of measles complicated with pneumonia. In older children, the culture was sometimes positive even if they had no clinical signs of pneumonia. In younger children, the bacteremia preceded the inflammation of the lungs. He considers it as a secondary infection.

Acta Scholae Medicinalis, Kioto

3: 175-202 (Oct.) 1922. English and German Edition

Laryngeal Musculature of the Japanese. K. Nihonsugi.—p. 75.
Pharmacologic Research on Surviving Rabbit Muscle. Y. Ishikawa. —p. 122.
Aberrant Bundle in Pons Region in the Japanese. K. Shimada. —p. 139.
The Corneal Epithelium of Warm-Blooded Animals in Tissue Culture. S. Matsumoto and H. Ishimaru.—p. 167.
Action of Drugs on Resected Rabbit Intestine Muscle.—H. Inoue. —p. 175.

3: 203-337 (Feb. 10) 1923. English and German Edition

Behavior of Leukocytes Under Various Conditions. I. T. Minaki. —p. 203. Idem. II. Idem.—p. 243.
*Interference with Blood Supply of Testes. K. Koyano.—p. 275.
*Intravenous Infusion of Physiologic Saline. T. Tsurumaki.—p. 303.
*Exophthalmic Goiter. K. Tsuji.—p. 329.

Changes in the Testes from Disturbance in Circulation.—Koyano reports the results of both clinical and experimental experience when the circulation of the blood in the testes was interfered with in various ways.

Intravenous Infusion of Physiologic Saline Solutions.—Tsurumaki experimented with both physiologic salt solution and the Ringer-Locke solution. The latter is eliminated more rapidly and completely, and seems to damage the organs less than physiologic sodium chlorid solution.

Exophthalmic Goiter.—Tsuji reports experimental and clinical studies on the etiology and treatment of exophthalmic goiter. The benefit from suprarenal treatment is shown in subsidence of abnormal sweating, of digestive disturbance, and of the bronzing and emaciation—which testifies that the suprarenals are responsible for these elements in the clinical picture.

Mitteil. a. d. Med. Fak. Univ., Tokyo

29: 421-624 (Dec. 9) 1922. German Edition

*Research on Hemolysis. Y. Fujimori.—p. 421.
*Primary Disease of Lymphatic Tissue. T. Kodama.—p. 433.
*Resection of Ribs for Empyema. M. Saito.—p. 477.
*Origin of Hyperacidity. S. Yaoita.—p. 521.
*Pathogenesis of Heart Failure in Pneumonia. K. Kakinuma.—p. 587.

Research on Hemolysis.—In this second communication, Fujimori discusses the action of glucose in arresting hemolysis in certain species of animals. No inhibiting action was apparent in man and dogs.

Primary Disease of Lymphatic Tissue.—Kodama's profusely illustrated study includes what he calls a new group of lymphomas, a systematic lymphosarcomatosis, besides Kundrat's lymphosarcomatosis, and lymphatic and sarcoid leukemia, and pseudoleukemia.

Pleural Empyema.—Saito applied Schede's operation in four of seventeen cases of empyema of the chest. He gives the details of the seventeen cases, and insists on the instructive findings when the cavity is rinsed out and its capacity thus measured daily, as a guide to treatment.

Tests of Stomach Function.—Yaoita calls attention to sources of error and discrepancies in the findings with the Mathieu and Strauss methods of investigation, and describes what he says is a new reliable method he has devised to estimate secretory conditions in the stomach. He uses creatinin for his test, as this does not irritate the stomach, and normally never occurs in this organ, and as it is neutral, it does not modify the acidity, while it can be titrated with precision by the color reaction.

Heart Failure in Pneumonia.—Kakinuma gives eight folding tables to chart the results of his study of the weakening of the circulation in experimental pneumococcus pneumonia in rabbits. Various means to modify the blood pressure were applied, and the findings were compared with normal controls. The heart seems to be influenced by the infection at the same time or earlier than the vasomotors. He seeks to explain the difference between the American and the German findings in this line. His position is intermediate.

30: 1-206 (Dec. 29) 1922. German Edition

Metabolic Findings in Four Cases of Addison's Disease. K. Gyotoku and M. Momose.—p. 1.
Atypical Proliferation of Epithelium After Implanting Paraffin with Soot in Rabbits' Lungs. K. Ibuka.—p. 35.
Postmortem Splitting of Glycogen in the Liver. G. Kira.—p. 51.
Experimental Study of Calcium and Magnesium Metabolism. I. Kishi.—p. 91.
*Influence of the Thymus on Growth. H. Katsura.—p. 177.

Influence of the Thymus on Growth.—Katsura investigated this problem by feeding thymus tissue or extract, by cultivation of tissues outside the body, and by removing the thymus. The work was done mainly on chickens.

Mitteil. a. d. Med. Fak. Univ. Fukuoka, Japan

6: 255-393, 1922. English and German Edition

Healing Process in Fractured Bones in Animals. H. Fujiki.—p. 255.
The Connective Tissue Fibril (Gitterfasern) Framework of Cancers. H. Fujiki.—p. 283.
Development of Paragonimus Westermanni in Snails. K. Miyairi. —p. 313.
*Chondriosomes in Glandular Cells. M. Ishisawa.—p. 321.
The Ta Peak in the Auricle Electrogram. S. Ono and M. Ishihara. —p. 325.
Experimental Research on Causes of Phlyctenae. Y. Kuboki.—p. 333.

Origin and Significance of Chondriosomes.—Ishisawa discusses the arrangement of the chondriosomes in gland cells, ascribing importance to it, as indicating that the chondriosomes have a subordinate relation to the structure and function of cells.

7: 1-419, 1923. German Edition

Experimental Research on Resorbing Power of the Gallbladder. H. Iwanaga.—p. 1.
*Acute Necrosis of the Pancreas. R. Ohno.—p. 31.
*Digestive Power of Pancreatic Juice. R. Ohno.—p. 117
*Experimental and Clinical Study of Blood Transfusion. T. Torii. —p. 137.
Innervation of Large Intestine. N. Ishikawa.—p. 295.
Pathogenesis and Nature of Megacolon. N. Ishikawa.—p. 339.
Bastardization of Castor Oil Plants. R. Kohetsu.—p. 401.

Treatment of Acute Necrosis of the Pancreas.—Ohno discusses the etiology of acute hemorrhagic necrosis of the pancreas, ascribing it to the toxic action from the products of destruction of tissue by the proteolytic trypsin. He analyzes the share of the toxic action of the pancreatic juice in the destructive process, and reports the results of efforts to induce active and passive immunization of dogs by intraperitoneal injection of pancreatic juice, trypsin and pancreatin. Eight dogs were thus immunized until they could bear the thousandfold otherwise fatal dose of the destructive pancreatic juice. He concludes his report with an urgent appeal to apply immunization along these lines in prophylaxis and treatment of acute clinical hemorrhagic necrosis of the pancreas, of spontaneous or operative origin. He found a combination of active and passive immunization most effective. The immune serum of dogs given preliminary treatment with pancreatin neutralized the hundred and fifty-fold fatal dose. Among the points he brought out by his research is that the combination of bile with enterokinase increased the proteolytic power of pancreatic juice over a thousandfold.

Digestive Potency of Pancreatic Juice.—In continuing his research on pancreas function, Ohno found that all the proferments have a specific digestive action, without requiring activation. The action of trypsinogen is least pronounced of the three.

Blood Transfusion.—Torii concludes from his extensive research that mishaps in transfusion of blood may be traceable to acute dilatation of the heart or the use of new rubber tubes, as well as to discrepancies in blood grouping. He presents an illustrated description of an apparatus for blood transfusion which, he thinks, will obviate many of the drawbacks of other methods, by its automatic gravity valve.